American Journal of

PUBLIC HEALTH

and The Nation's Health

SPECIAL BOOK ISSUE

The 83rd Annual Meeting
Kansas City, Mo.
Municipal Auditorium
November 14–18

APRIL, 1955

volume 45

number 4

A New Publication of the

American Public Health Association

HEALTH SUPERVISION OF YOUNG CHILDREN

A Guide for Practicing Physicians and Child Health Conference Personnel

Prepared and authorized for publication by the Committee on Child Health, American Public Health Association. Endorsed by the American Academy of Pediatrics, the U. S. Children's Bureau, and the National League for Nursing.

180 PAGES, 6½ x 9½, $2.00

Write for prices on 25 or more

Five years in preparation, "Health Supervision of Young Children" is a full presentation of new concepts, methods and practices in child health care. It covers the physical and psychological aspects of health supervision with particular attention to the interrelationship between the two, and brings together much new information about the health needs of children not yet easily available elsewhere.

The guide is divided into two parts. Part I tells what health supervision is, wherever it is carried on, and is for all physicians, nurses and other professional persons responsible for the health of children. Part II shows how health supervision is carried out in the child health conference. This part will be of special interest to all personnel of child health conferences.

"Health Supervision of Young Children" has been developed with the active participation of many prominent professional workers in medicine, public health, and child welfare. It is a project of the APHA's Committee on Child Health, Samuel M. Wishik, M.D., chairman, in association with review committees of the American Academy of Pediatrics and the Children's Bureau. The material was written by Nina Ridenour, Ph.D.

ORDER FROM THE BOOK SERVICE

AMERICAN PUBLIC HEALTH ASSOCIATION

1790 BROADWAY NEW YORK 19, N. Y.

Healthier Living

by Justus J. Schifferes, Ph.D.*

For all adults and college students. Up-to-date, authoritative, readable text in personal and community health. A Health Education Council Book.

928 pages. Indexed. Illustrated. Beautifully bound. $6.75

This book gives you the "open secrets" of healthier living — more effective personal living—*happier living*. It enables you to understand yourself and other people more clearly than you could otherwise hope to do. Why? Because it gives fuller attention to the social and cultural factors that play upon your mind and body than any other book on health!

Healthier Living dares to speak on topics neglected by many authors—sex and religion, sexual adjustment before marriage. It upsets the nonsense about nutrition, dental health, posture, menstruation, eye health, and many other subjects about which misinformation still parades as truth.

Opening with problems of personal adjustment, it carries its readers all the way through the mazes of personal and community health to problems of world health. Few books are so readable as *Healthier Living*. One reviewer said: "I did not intend to read the book with word-by-word thoroughness, but I did exactly that. The interesting style which Dr. Schifferes has achieved captured me." Another reviewer said: "This book is different from any comparable book. It may be a masterpiece and it may be epochal."

Special features of *Healthier Living* are: flexible organization into 53 chapters (and 26 self-contained units for easy learning); built-in outside reading, "a library in your lap"; lavishly illustrated by Dr. Louise Bush; annotated bibliography, nowhere else available; 500 questions for discussion and self-testing; index of 3,000 items; a wealth of information condensed, summarized and organized for lively, easy reading and teaching.

* Director, Health Education Council; Medical Writer, National Foundation for Infantile Paralysis. Formerly Associate in Hygiene, Columbia University; Instructor in Health Education, Teachers College, Columbia University.

CONTENTS OF *HEALTHIER LIVING*

PART I: INTRODUCTION AND ORIENTATION. (1) An Introduction to Healthier Living. PART II: EDUCATION FOR FAMILY LIVING. (2) Family Background. (3) Development of the Individual. (4) Human Reproduction. (5) Medical Aspects of Human Reproduction. (6) Social Aspects of Sexual Adjustment. (7) Sexual Adjustment Before Marriage. (8) Love, Marriage, and Mate Selection. PART III: MENTAL HEALTH. (9) Mental Health and Normal Emotional Development. (10) Personality Development—The Unconscious Mind. (11) The Mental Mechanisms. (12) Failures in Life Adjustment —Mental Illness. (13) Accidents. (14) Achieving a Mature Philosophy of Life. PART IV: PERSONAL HEALTH. (15) Food and Nutrition. (16) Problems and Failures in Nutrition. (17) Physical and Motor Activity. (18) The Body in Motion and at Rest. (19) Body Care and Grooming. (20) Sight and Sound—Vision, Hearing, and Speech. (21) Personal Protection Against Health Hazards. (22) Obtaining Good and Escaping Bad Medical Advice. (23) Degenerative Diseases: Heart Disease, Cancer. PART V: COMMUNITY HEALTH. (24) Communicable Disease Control I: Microbiology and Epidemiology. (25) Communicable Disease Control II: Respiratory and Venereal Disease. (26) Community Health Organization.

HEALTH EDUCATION COUNCIL
10 Downing Street, New York 14, N. Y.

Please send me ..... copies of HEALTHIER LIVING. 928 pages. Indexed. Illustrated. Beautifully bound. $6.75.

I understand that I can keep it and read it for 10 days at no cost or obligation. If I keep the book(s) bill me $6.75 each plus few cents shipping charges. TRANSPORTATION FREE if cash with order. Complete refund, of course, if returned in 10 days.

NAME .....
(Please print or type)

ADDRESS .....

SIGNATURE..... Date.....

American Journal of

PUBLIC HEALTH

and the Nation's Health

Official Monthly Publication of the American Public Health Association, Inc.

Volume 45 | April, 1955 | Number 4

ABEL WOLMAN, DR.ENG., Editor
RAYMOND S. PATTERSON, PH.D., Associate Editor
REGINALD M. ATWATER, M.D., Managing Editor

EDITORIAL BOARD

JOHN D. PORTERFIELD, M.D., Chairman
HOWARD W. ENNES, JR., M.P.H.
MARK D. HOLLIS, C.E.
RUTH W. HUBBARD, R.N.
EDMUND K. KLINE, DR.P.H.
GEORGE ROSEN, M.D.
The Editor, Associate Editor, and Managing Editor

STAFF

LYDIA GARI, Editorial Assistant
ELIZABETH KELLOGG, Editorial Assistant
FRANCES TOOROCK, Editorial Associate
WILLIMINA RAYNE WALSH, Associate Secretary

CONTENTS

PAGE

A Bookshelf on Foods and Nutrition 419
ROBERT E. SHANK, M.D., AND EMIL M. MRAK, PH.D.

Serologic Epidemiology of Poliomyelitis 429
JOSEPH L. MELNICK, PH.D.; JOHN R. PAUL, M.D.; AND MARY WALTON, M.D.

An Educational Project in Childhood Accident Prevention 438
RENEE ZINDWER, M.D., M.P.H.

Discussion: Safety Education Without Fear 441
PAUL V. LEMKAU, M.D.

Experience with Home Care for Cardiac Patients 444
HENRY J. BAKST, M.D., AND EDWARD F. MARRA, M.D.

Continued on page vi

The American Journal of Public Health is published by the American Public Health Association, Inc., at 374 Broadway, Albany 7, N. Y. Executive office 1790 Broadway, New York 19, N. Y. Subscription price $10.00 per year for United States, Cuba and Mexico, South and Central America; $10.50 for Canada; and $11.00 for other countries. Single copies $1.00 postpaid. Entered as second-class matter at the Post Office at Albany, N. Y., September 17, 1932, under the Act of March 3, 1879. Published monthly. Copyright, 1955, by American Public Health Association, Inc. The American Journal of Public Health is indexed in the Industrial Arts Index and, in part, in the quarterly Cumulative Index Medicus, Biological Abstracts, Chemical Abstracts, Engineering Index, and Public Affairs Information Service.

Address all correspondence to the Managing Editor. 1790 Broadway, New York 19, N. Y.

proved therapy in alcoholism

"ANTABUSE"®

brand of DISULFIRAM (tetraethylthiuram disulfide)

*"... the most important advance in the medical management of chronic alcoholism ..."**

"Antabuse" gives the patient a forceful and immediate reason for not drinking . . . he finds he cannot drink without experiencing extreme discomfort. By keeping the patient away from alcohol, "Antabuse" serves as a valuable adjunct to psychotherapeutic measures.

*Feldman, D. J., and Zucker, H. D.: J.A.M.A. *153*:895 (Nov. 7) 1953.

5422

A brochure giving full details of therapy will be sent to physicians upon request.

is supplied in 0.5 Gm. tablets (scored), bottles of 50 and 1,000.

Ayerst Laboratories • New York, N. Y. • Montreal, Canada

Ayerst

Contents—Continued PAGE

Growth Characteristics, Virulence, and Cytochemical Properties of Tubercle Bacilli Recovered from Patients Treated with Isoniazid 451
ROBERT A. PATNODE, PH.D.; MARTHA C. DAIL; AND PAUL C. HUDGINS

Standardization of Diagnostic Methods for Gonococcal Infections 457
LIEUTENANT COLONEL PAUL S. PARRINO, MC, USA; CAPTAIN EDWARD J. O'SHAUGHNESSY, MC; AND FIRST LIEUTENANT JOHN D. WHITE, MSC.

Diet and Nutritional Status of Iowa School Children 464
ERCEL S. EPPRICHT, PH.D., AND CHARLOTTE RODERUCK, PH.D.

Drought Problems and Their Effect on Municipal Water Supplies 472
CLAYTON H. BILLINGS, S.M.

Present Status of Our Knowledge of DDT Intoxication 478
WAYLAND J. HAYES, JR., M.D., PH.D.

A Water-Borne Outbreak of Amebiasis 486
ANDREW C. OFFUTT, M.D.; BLUCHER A. POOLE, C.E.; AND GEORGE G. FASSNACHT, M.C.E.

Use of Multiple Causes in the Classification of Deaths from Cardiovascular-Renal Disease 492
LOUIS WEINER; MARJORIE T. BELLOWS; GRACE H. MCAVOY; AND ELI V. COHEN

EDITORIALS:

The Bookshelf in Nutrition 502
Progress in Mental Hygiene Research 502
Man and Chemicals—Poisoning Control Programs 504
How Good Are Our Practices? 505

COMMITTEE REPORT:

Research Problems in Maternal and Child Health and Child Development. Committee on Research and Standards 506
SIDNEY S. CHIPMAN, M.D., AND BERNARD G. GREENBERG, PH.D.

Clearing House on Public Health Salary Information and Personnel Needs 509

Credit Lines 514

Books and Reports 516

Books Received 523

A Selected Public Health Bibliography 524

APHA Section Councils 527

Committee Lists, 1954–1955 529

Association News 552
Fellowship in the American Public Health Association. Presidents of the American Public Health Association. Recipients of the Sedgwick Memorial Medal. Recipients of the Lasker Awards. Scientific Exhibit Citations—Buffalo Annual Meeting. List of Annual Meetings. Eighty-Third Annual Meeting, Kansas City, Mo., November 14–18: Hotel Rates, Hotel and Motel Reservation Forms.

Employment Service 561

News from the Field 564

Conferences and Dates 573

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear. These are not to be regarded as expressing the views of the American Public Health Association, Inc., unless formally adopted by the vote of the Association.

Reprint prices in quantity furnished upon request.

About POLIO VACCINE...

An important announcement from Wyeth Laboratories

ONLY with the issuance of the Francis report will the medical world know whether it is at the threshold of mass-prevention of paralytic poliomyelitis. In anticipation of this momentous report, Wyeth Laboratories is engaged in production of the Salk-type vaccine. It is proud to link its facilities with the brilliantly coordinated national action.

Mass-immunization requires mass-production of the vaccine. Wyeth Laboratories' part in this challenging task is met by its Biological Laboratories at Marietta, Pa. Here, the Salk-type vaccine is produced in constantly increasing quantities. When licensed for use by the National Institutes of Health, substantial amounts will be ready for the 1955 program of the National Foundation, as well as for the requirements of physicians in private and public-health practice.

In serving those who may receive protective vaccination, Wyeth Laboratories takes pride in participating in a venture of such promise to human welfare.

H. S. Howard

HARRY S. HOWARD
President, Wyeth Laboratories

Wyeth
Philadelphia 2, Pa.

REPORTS OF THE COMMITTEE ON PROFESSIONAL EDUCATION

(Officially Approved by the Governing Council of the A.P.H.A.)

Educational and Experience Qualifications of Administrative Personnel (Non-Medical) in Public Health Agencies
Educational and Experience Qualifications of Physical Therapists in Public Health Agencies
Educational Qualifications of Industrial Hygiene Personnel Other Than Medical, Dental, and Nursing (Proposed)
Educational and Experience Qualifications of Public Health Laboratory Workers
Educational Qualifications of Executives of Voluntary Health Associations
Educational Qualifications of Community Health Educators
Educational Qualifications of Directors of Public Health Departments (Proposed)
Educational Qualifications of Medical Administrators of Specialized Health Activities
Educational Qualifications of Medical Social Workers in Public Health Programs
Educational Qualifications of Nutritionists in Health Agencies
Educational Qualifications of Public Health Dentists
Educational Qualifications of Sanitary Engineers Engaged in the Field of Public Health (Proposed)
Educational Qualifications for Public Health Nursing Personnel
Educational Qualifications of Public Health Statisticians
Educational Qualifications of Public Health Veterinarians
Educational Qualifications of Sanitarians
Educational Qualifications of School Physicians
Report on Field Training of Public Health Personnel

Single copies are available without charge

Address requests to the

Book Service

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.

1790 Broadway at 58th Street New York 19, N. Y.

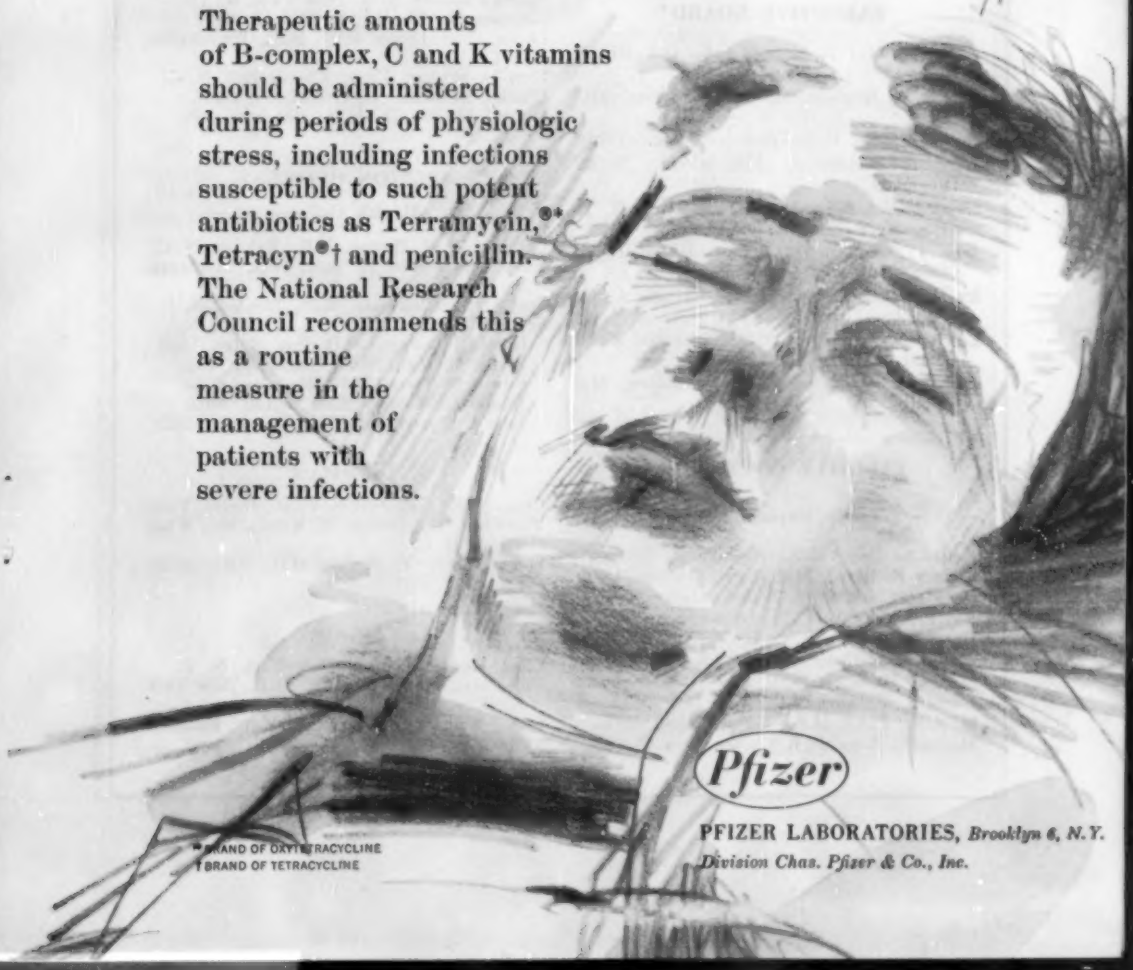
INDEX TO ADVERTISERS

	Page
American Public Health Association:	
Affiliated Societies and Branches	XXXVII
Book Service.....II, VIII, XXVII, XXVIII, XXXIII	
Governing Council	X, XI
Membership Application Blank	XXXV
Sustaining Members	XXXIV
American Bottlers of Carbonated Beverages	XIII
American Can Company	LIII
American Meat Institute	LV
American Seal-Kap Corp.	XXXVIII
Appleton-Century-Crofts, Inc.	XVI
Ayerst Laboratories	V
Blakiston Division, McGraw-Hill Book Co.	XV
Borden Company	LIV
British Information Services	XIV
Chicago Dietetic Supply House	XXXVI
Coca-Cola	XXXV
Columbia University Press	XVII
Corning Glass Works	LII
Crown Cork & Seal	LI
Difco Laboratories	Back Cover
Directory of Health Service	XXXVIII
Black & Veatch Emerson Venable, P.E. The Samson Laboratories Professional Examination Service, A.P.H.A.	
Diversey Corporation	XXXIII
Florida Citrus Commission	L
Harcourt, Brace	XXII
Harper & Brothers	XXII
Harvard University Press	XX, XXI
Health Education Council	III
Hoffmann-La Roche	XLVIII
Holland-Rantos Co., Inc.	XXXVII
Interscience Publishers, Inc.	XXX
Lea & Febiger	XVI
Lederle Laboratories	XXXVIII
McGraw-Hill Book Co.	XII
M & R Laboratories	XLVII
Macmillan Company	XVIII
Macy, Josiah Jr. Foundation	XXIII
Millipore Filter Corporation	XLIX
National Dairy Council	XLIII
Oval Wood Dish Corporation	XXXVI
Pagent Press	574
Pfizer Laboratories, Division Chas. Pfizer & Co., Inc.	IX
Philosophical Library	XIX
Powers X-Ray Products, Inc.	XXXIX
Ronald Press	XXV
Russel Sage Foundation	XXVI
Saunders, W. B., Company	XXXI
Schieffelin & Co.	XLVI
Standard Scientific Supply Corp.	XXIV
Sterwin Chemicals, Inc.	XLV
Wallace & Tiernan	XXXII, XXXIX
White Laboratories	XLII
Wiley, John & Sons, Inc.	XXIX
Williams & Wilkins Company	XXX
Winthrop-Stearns, Inc.	XL
Wyeth, Inc.	VII, XLI

Stress Fortify

the patient with infections

Therapeutic amounts of B-complex, C and K vitamins should be administered during periods of physiologic stress, including infections susceptible to such potent antibiotics as Terramycin,®* Tetracyn®† and penicillin. The National Research Council recommends this as a routine measure in the management of patients with severe infections.



Pfizer

PFIZER LABORATORIES, *Brooklyn 6, N.Y.*
Division Chas. Pfizer & Co., Inc.

*BRAND OF OXYTETRACYCLINE
†BRAND OF TETRACYCLINE

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
GOVERNING COUNCIL

OFFICERS 1954–1955

President, Herman E. Hilleboe, M.D., Albany, N. Y.

President-Elect, Ira V. Hiscock, Sc.D., New Haven, Conn.

Vice-President, Athemas Bellerive, M.D., Port-au-Prince, Haiti

Vice-President, Allan R. Morton, M.D., Halifax, Nova Scotia

Vice-President, Huntington Williams, M.D., Baltimore, Md.

Treasurer, Charles Glen King, Ph.D., New York, N. Y.

Chairman of Executive Board, Roy J. Morton, C.E., Oak Ridge, Tenn.

Executive Secretary, Reginald M. Atwater, M.D., New York, N. Y.

EXECUTIVE BOARD

Chairman, Roy J. Morton, C.E., Oak Ridge, Tenn. (1957)

George A. Denison, M.D., Birmingham, Ala. (1957)

Ruth Freeman, Ed.D., Baltimore, Md. (1956)

Herman E. Hilleboe, M.D., Albany, N. Y. (President)

Charles Glen King, Ph.D., New York, N. Y. (Treasurer)

John W. Knutson, D.D.S., Washington, D. C. (1955)

Ira V. Hiscock, Sc.D., New Haven, Conn. (President-Elect)

Lawrence J. Peterson, M.S.P.H., Boise, Idaho (1956)

Ernest L. Stebbins, M.D., Baltimore, Md. (1955)

ELECTIVE COUNCILORS

Terms Expiring 1955

Katherine Bain, M.D., Washington, D. C.
Rodney R. Beard, M.D., San Francisco, Calif.
Dean A. Clark, M.D., Boston, Mass.
Roy L. Cleere, M.D., Denver, Colo.
Hazel V. Dudley, R.N., Hartford, Conn.
Arthur C. Hollister, Jr., M.D., Berkeley, Calif.
John F. Mahoney, M.D., New York, N. Y.
Harry S. Mustard, M.D., New York, N. Y.
M. Allen Pond, M.P.H., Washington, D. C.
Marian G. Randall, R.N., New York, N. Y.

Terms Expiring 1956

Justin M. Andrews, Sc.D., Washington, D. C.
Richard F. Boyd, M.D., San Francisco, Calif.
Paul M. Densen, D.Sc., Pittsburgh, Pa.
Thomas D. Dublin, M.D., New York, N. Y.
Kenneth A. Easlick, D.D.S., Ann Arbor, Mich.
Rena Haig, R.N., San Francisco, Calif.
C. Frances MacKinnon, M.S., Chapel Hill, N. C.
James H. Steele, D.V.M., Atlanta, Ga.
Felix J. Underwood, M.D., Jackson, Miss.
George M. Wheatley, M.D., New York, N. Y.

Terms Exipring 1957

Lester Breslow, M.D., Berkeley, Calif.
George D. W. Cameron, M.D., Ottawa, Ont., Canada
Selwyn D. Collins, Ph.D., Washington, D. C.
Mayhew Derryberry, Ph.D., Washington, D. C.
Norman Jolliffe, M.D., New York, N. Y.
Clarence W. Klassen, Springfield, Ill.
Lucile Petry Leone, R.N., M.A., Washington, D. C.
Lucy S. Morgan, Ph.D., Chapel Hill, N. C.
Charles E. Smith, M.D., Berkeley, Calif.
Samuel M. Wishik, M.D., Pittsburgh, Pa.

SECTION OFFICERS

Health Officers

Chm., J. W. R. Norton, M.D., Raleigh, N. C.
Vice-Chm., Robert N. Barr, M.D., Minneapolis, Minn.
Secy., Daniel Bergsma, M.D., Trenton, N. J.
Section Council:
Harold D. Chope, M.D., San Mateo, Calif.
Frank M. Hall, M.D., Gainesville, Fla.
Edwin H. Jorris, M.D., Madison, Wisc.
Joseph G. Molner, M.D., Detroit, Mich.
John D. Porterfield, M.D., Columbus, Ohio

Laboratory

Chm., S. Edward Sulkin, Ph.D., Dallas, Texas
Vice-Chm., Col. Dwight M. Kuhns, MC, Washington, D. C.
Secy., Albert V. Hardy, M.D., Jacksonville, Fla.

Statistics

Chm., Carl L. Erhardt, New York, N. Y.
Vice-Chm., John W. Fertig, Ph.D., New York, N. Y.
Secy., William M. Haenszel, M.A., Bethesda, Md.

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
GOVERNING COUNCIL—Cont.

Engineering and Sanitation

Chm., Walter S. Mangold, Berkeley, Calif.
Vice-Chm., Earle W. Sudderth, Dallas, Texas
Secy., Clarence I. Sterling, Jr., Boston, Mass.

Occupational Health

Chm., Carl A. Nau, M.D., Galveston, Texas
Vice-Chm., Clyde M. Berry, Ph.D., Linden, N. J.
Secy., Lewis J. Cralley, Ph.D., Cincinnati, Ohio

Food and Nutrition

Chm., Harry W. von Loesecke, Silver Spring, Md.
Vice-Chm., Bertlyn Bosley, Ph.D., Raleigh, N. C.
Secy., Helen E. Walsh, MA, San Francisco, Calif.

Maternal and Child Health

Chm., Martha L. Clifford, M.D., Hartford, Conn.
Vice-Chm., R. Gerald Rice, M.D., Cambridge, Mass.
Secy., Alfred Yankauer, M.D., Albany, N. Y.

Public Health Education

Chm., Ann W. Haynes, M.P.H., San Francisco, Calif.
Vice-Chm., Ben D. Kiningham, Jr., Springfield, Ill.
Secy., Lucretia A. Saunders, M.P.H., San Francisco, Calif.

Public Health Nursing

Chm., Marion I. Murphy, R.N., Minneapolis, Minn.
Vice-Chm., Edna J. Brandt, Seattle, Wash.
Secy., Helen L. Fisk, R.N., Baltimore, Md.

Epidemiology

Chm., John E. Gordon, M.D., Boston, Mass.
Vice-Chm., Joseph A. Bell, M.D., Bethesda, Md.
Secy., Wendell R. Ames, M.D., Buffalo, N. Y.

School Health

Chm., Charles C. Wilson, M.D., New Haven, Conn.
Vice-Chm., Franklin M. Foote, M.D., New York, N. Y.
Secy., Elena M. Sliepcevich, M.A., Springfield, Mass.

Dental Health

Chm., H. Shirley Dwyer, D.D.S., Little Rock, Ark.
Vice-Chm., John T. Fulton, D.D.S., Washington, D. C.
Secy., Carl L. Sebelius, D.D.S., Nashville, Tenn.

Medical Care

Chm., Paul A. Lembcke, M.D., Baltimore, Md
Vice-Chm., Frederick D. Mott, M.D., Washington, D. C.
Secy., Herbert Notkin, M.D., Syracuse, N. Y.

Representatives of Affiliated Societies and Branches

George W. Marx, C.E., Arizona
J. Robert Cameron, M.P.H., Colorado
Harold S. Barrett, M.D., Connecticut
Guillermo Lage, M.D., Cuba
Wilson T. Sowder, M.D., Florida
M. E. Winchester, M.D., Georgia
Lawrence J. Peterson, M.S.P.H., Idaho
Leroy L. Fatheree, M.D., Illinois
Edmund G. Zimmerer, M.D., Iowa
Thomas R. Hood, M.D., Kansas
Ben Freedman, M.D., Louisiana
Franz Goldmann, M.D., Massachusetts
Morton S. Hilbert, Michigan
Robert N. Barr, M.D., Minnesota
J. Earl Smith, M.D., Missouri
Portia G. Irick, R.N., New Mexico
Louis Weiner, New York City
Mary E. Parker, R.N., New York State
Everett H. Ellinwood, M.D., North Carolina
Bernardine Cervinski, North Dakota
Ellis Sox, M.D., Northern California
Lillian Derflinger, R.N., Ohio
Margaret F. Shackelford, Oklahoma
Bernard M. Blum, M.D., Pennsylvania
Francisco Berio, M.D., Puerto Rico
G. S. T. Peeples, M.D., South Carolina
Edward Lee Russell, M.D., Southern California
Ben E. Diamond, M.A., South Dakota
Lloyd M. Graves, M.D., Tennessee
Henry E. Drumwright, Texas
D. K. Barnes, M.D., Utah
John L. Jones, M.D., Washington State
Guy R. Post, M.D., West Virginia
Andrew Hedmeg, M.D., Southern Branch
Harold M. Erickson, M.D., Western Branch

Important McGRAW-HILL *Books*

HEALTH FOR EFFECTIVE LIVING: A basic Health Education Text for College Students

By EDWARD B. JOHNS and WILFRED C. SUTTON, University of California at Los Angeles, and LLOYD E. WEBSTER, Los Angeles County Schools. 490 pages, $4.75

This practical new volume is designed to assist people in achieving the improvement of health behavior for more effective living. The authors depart from the traditional dichotomy of personal and community health, believing that personal, family, and community health interact as the individual makes his life adjustments. Emphasis is on intelligent action rather than on memorization of facts.

GOOD HEALTH: For You, Your Family, and Your Community

By NELSON W. WALKE, NATHAN DOSCHER, and GLENNA G. CADDY, Brooklyn College. *McGraw-Hill Series in Health Education, Physical Education, and Recreation.* Ready in April

A basic textbook which synthesizes the numerous and varied topics and takes into account the total impact of every phase of life upon the health of the individual. Information and facts are stressed. Scientific data are included as they relate to good health. Every conceivable recent advance in the field is covered. This book includes all pertinent scientific material, integrated into a thoroughly synthesized presentation that will promote the best health in the family, the community, and the individual.

TEXTBOOK OF HEALTHFUL LIVING New Fifth Edition

By HAROLD S. DIEHL, M.D., University of Minnesota. 826 pages, $6.00

This new revision of a highly successful hygiene text incorporates recent advances in the improvement of personal health, in preventive medicine, in the prolongation of life, and in public health. New materials on rehabilitation of the disabled, the relations of smoking to cancer of the lung, the prevention of poliomyelitis, Rh incompatibility, etc., have been added. There are valuable appendixes on standard weights for men and women, food values in common portions control measures for communicable diseases, and a glossary of scientific and medical terms. All data, statistics, tables, and charts are brought up to date.

ELEMENTS OF HEALTHFUL LIVING New Third Edition

By HAROLD S. DIEHL, M.D. Ready in May

The abridged version of the above textbook designed for shorter, more intensive courses in the subject. While shortening the text, the author has retained the flavor of liberal documentation and descriptive clarity which gives the longer text its distinctive character. Subject matter has been revised in accord with medical and scientific progress of the last five years.

MEREDITH'S HYGIENE New Fifth Edition

Revised by ARTHUR DAVIS, Pennsylvania State University, and WARREN H. SOUTHWORTH, University of Wisconsin. 906 pages, $6.00

An outstanding college textbook on physical, mental, and social health from personal and public aspects. It places emphasis upon personal hygiene and the responsibility of the individual for protecting and promoting his own health and the health of others. It is extensively revised to include the most recent information from the advanced studies in the health sciences, new interpretations of already known facts, and new relationships between old and new knowledge. It will be valuable as a future reference in family living.

Send for copies on approval

McGraw-Hill
BOOK COMPANY, INC.
330 West 42nd Street New York 36, N. Y.

CARBONATED BEVERAGES

termed non-cariogenic in new medical study!

Oster et al.[1] have demonstrated convincingly that the drinking of acidulated soft drinks resulted in an instantaneous secretion of saliva which more than neutralized oral acidity. The salivary buffering response was so rapid that in 195 individuals, 96 per cent had an oral pH above the control within two minutes after drinking the beverage. Fifty-three per cent responded within 12 seconds. Hence the sugar in soft drinks does not remain in the mouth long enough to produce an acid concentration by fermentation, and the profuse flow of saliva in response to the tasteful beverage more than neutralizes any incidental oral acidity.

This study confirms prior studies which show that the drinking of soft drinks produces less oral acidity than most solid foods,[2] and the sugar solution in soft drinks rapidly passes through the mouth with little or no contact with the teeth. For these reasons, the likelihood of a localized oral acidic condition favorable to caries is virtually non-existent.

1. Oster, R. H., Proutt, L. M., Shipley, E. R., Pollack, B. R., and Bradley, J. E., J. Applied Physiol. *6*:348-354, 1953.
2. Bibby, B. G., Goldberg, H., and Chen, E.: J.A.D.A. *42*:491-509, 1951.

The American Bottlers of Carbonated Beverages is a non-profit association of manufacturers of bottled soft drinks, with members in every State. Its purposes . . . to improve production and distribution methods through education and research, and to promote better understanding of the industry and its products.

The National Association of the Soft Drink Industry

American Bottlers of Carbonated Beverages

WASHINGTON 6, D. C.

British Information Services

presents a distinguished new series of

16MM SOUND MOTION PICTURES

"SOME ASPECTS OF ACCESSIBLE CANCER"

". . . Impressive and educational . . . well organized . . . very well illustrated clear and concise . . . recommended for general practitioners and medical students . . ."

—Journal of the American Medical Association.

SKIN

This film concentrates on rodentulcer and squamous cell carcinoma. A series of typical cases, treatment by radiotherapy and by surgery, cosmetic factors and plastic reconstructions.

RECTUM

This film points out the importance of rectal examination in all suspicious cases, followed if necessary by sigmoidoscopy.

•

And . . . now Ready . . . the following films in this important new series produced by the British Ministry of Health to describe the methods of approach to cancer as practiced in Britain.

LIP, TONGUE AND MOUTH

The quiet symptomless beginnings of squamous epitheliomata in this site, and essential curability of these early lesions are stressed. Diagnoses and treatment of typical cases.

LARYNX

This film is notable for the photographs of tumors of the vocal cords seen laryngoscopically. Treatment of early case. Highly effective oesophageal voice achieved, is demonstrated.

BREAST

Simple methods of examination are explained and demonstrated. Radical mastectomy of tumor shown in detail. Radiotherapy and hormone therapy discussed.

CERVIX AND UTERUS

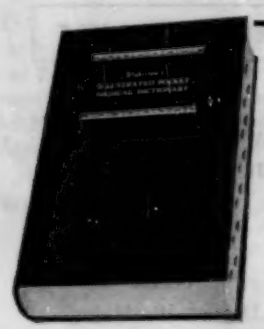
Methods of examining the cervix are shown and methods of radiotherapy explained and demonstrated. For carcinoma of the body of uterus the importance of curettage and histological examination is stressed. Panhysterectomy is shown in detail.

•

Prints of "SOME ASPECTS OF ACCESSIBLE CANCER" are now available in the United States. Sale price for each subject $90.00. Complete series $400.00. Daily rental $10.00 per subject. Complete catalogue on request from:

BRITISH INFORMATION SERVICES

30 Rockefeller Plaza **New York 20, N. Y.**



Are YOU using a good, up-to-date medical dictionary?

for $3.25 you can now own

BLAKISTON'S ILLUSTRATED POCKET MEDICAL DICTIONARY

33,000 Entries With Valuable Drug Information
60 Illustrations (Many in color) Same Size As Big Dictionaries

In this new dictionary you have 33,000 completely defined, authoritative entries. Included also, is information on new drugs and recent advances in medical and allied fields. In addition, there is a special section of 60 illustrations (many in color), all the same large size as in the big medical dictionaries. Another helpful feature is a 194-page section of important tables. Easy-to-read type; well bound. 1005 pages, 4½ x 7, 60 illustrations.

PLAIN Edition....$3.25 **Thumb Indexed....$3.75**

New 2nd Edition! INDUSTRIAL DUST

By PHILIP DRINKER and THEODORE HATCH—A critical discussion of dust control in relation to the health of workmen. This Second Edition includes the very extensive developments of the last eighteen years. The authors present not only analyses of dust conditions, but also methods of dust control; they tell not only how clean the air should be, but also how to clean it. Relating their material to an overall health scheme, they approach their subject comprehensively in its engineering, laboratory, and medical aspects. 401 pages, 6 x 9, 148 illustrations.....$10.00

order here

BLAKISTON DIVISION, McGRAW-HILL BOOK COMPANY, INC.
330 WEST 42nd STREET, NEW YORK 36, NEW YORK

Please send me for 10 days examination *

..... copies BLAKISTON'S ILLUSTRATED POCKET MEDICAL DICTIONARY
☐ PLAIN Edition.....$3.25 ☐ Thumb Indexed.....$3.75

..... copies INDUSTRIAL DUST, Drinker and Hatch.....$10.00

☐ Check Enc. ☐ M.O. Enc. (Postage Prepaid) ☐ Charge (Plus Postage)

NAME.....
(Please PRINT)

ADDRESS.....

CITY..... ZONE..... STATE.....

* *Examination Privileges Available ONLY in Continental U.S.A.* AJPH-4/55

DEPENDABLE FOR TEXT AND REFERENCE USE

ROSENAU PREVENTIVE MEDICINE AND HYGIENE

By **KENNETH F. MAXCY, M.D.** (Johns Hopkins)

Publ. Oct. 1951. 7th Edition. 1477 Pages. 262 Illustrations. $15.00

IMMUNITY, HYPERSENSITIVITY AND SEROLOGY

By **SIDNEY RAFFEL, M.D.** (Stanford)

Publ. Apr. 1953. 1st Edition. 531 Pages. 48 Illustrations. $8.00

TEXTBOOK OF CLINICAL PARASITOLOGY

(INCLUDING LABORATORY IDENTIFICATION AND TECHNIC)

By **DAVID L. BELDING, M.D.** (Boston Univ.)

Publ. Mch. 1952. 2nd Edition. 1148 Pages. 1015 Illustrations. $12.00

APPLETON-CENTURY-CROFTS, INC.
35 W. 32nd St., New York 1, N. Y.

LEA & FEBIGER Books on Public Health

Reddish — Antiseptics, Disinfectants, Fungicides, and Chemical and Physical Sterilization. 30 Contributors. 841 pages. 71 illustrations. 130 tables. $15.00

Bonica—The Management of Pain. 1533 pages, 7″ x 10″. 785 illustrations on 444 figures. 52 tables. $20.00

Master, Moser and Jaffe—Cardiac Emergencies and Heart Failure. 185 pages. 14 illustrations. *New 2nd edition. In press.*

Ziskind—Psychophysiologic Medicine. 370 pages. $7.00

Fleming, D'Alonzo and Zapp—Modern Occupational Medicine. 414 pages. 44 illustrations, 2 in color on 1 plate. 32 tables. $10.00.

Simmons and Gentzkow—Medical and Public Health Laboratory Methods. Many illustrations in Color. *New 6th edition. In press.*

Wohl and Goodhart—Modern Nutrition in Health and Disease. Illustrated. *New book. In press.*

Rice—Low-Sodium Diet. *A Manual for Patients on Salt Restricted Diets.* 103 pages. 14 food charts. $2.75

Washington Square **LEA & FEBIGER** Philadelphia 6 Pennsylvania

This is one of the most comprehensively documented books on any medical subject and represents, as such, a real achievement since, due to the world-wide distribution of this disease both in the past and in the present, plague has been the subject of innumerable publications in many languages. . . . This book is an invaluable addition to the medical library of organizations and individuals as a complete reference work on plague. *The Military Surgeon*

World Health Organization

PLAGUE

by

R. Pollitzer, M.D.

The papers contained in the present monograph cover the history and distribution of plague, the plague bacillus, immunology, pathology, laboratory diagnosis, hosts of infection, insect vectors, clinical aspects, epidemiology, and the control and prevention of plague. . . . The book is well printed and well illustrated. . . This volume maintains the high quality set by previous publications in the WHO monograph series. *The Journal of the American Medical Association*

This book can be recommended for all English-reading professional and technical workers engaged in the study and management of plague as a public health problem. *The Journal of the Student American Medical Association*

In preparing this monograph Dr. Pollitzer has provided an extremely valuable book, not only for research workers, but for others . . . regardless of their professional backgrounds or occupational interests. *The American Journal of Public Health*

$10.00 cloth

Effective January 1, 1955, World Health Organization publications were made available at the prices listed below, in a number of combinations that represent significant savings over the individual subscription prices. All subscriptions can be placed only for the calendar year of 1955.

Global Subscription: Includes Bulletin, Chronicle, International Digest of Health Legislation, Technical Report Series, Official Records, Weekly Epidemiological Record, Epidemiological and Vital Statistics Report, Supplements to the Bulletin, Monograph Series, Annual Epidemiological and Vital Statistic Reports, plus other occasional publications. $90.00.

Block Subscription: Contains the first seven of the above-listed publications. $50.00.

Combination Rates: Bulletin and Chronicle. $17.50. Weekly Epidemiological Record and Epidemiological and Vital Statistics Report. $17.50.

Separate Subscriptions: Bulletin, $16.00; Chronicle, $2.50; International Digest of Health Legislation, $6.00; Technical Report Series, $3.75; Official Records, $10.00; Epidemiological and Vital Statistics Report, $7.50; Weekly Epidemiological Record, $11.00.

INTERNATIONAL DOCUMENTS SERVICE

Columbia University Press • New York 27, N. Y.

Essential Aids in Meeting the Community's Needs

Harry S. Mustard, M.D., LL.D.

INTRODUCTION TO PUBLIC HEALTH *Third Edition*

A leading authority in the field conveys the philosophy, principles, and up-to-date methods of public health practice. Discussed are medical care, mental health, voluntary health programs, sanitation, industrial hygiene, and other areas. 315 pp. $4.50

W. G. Smillie, M.D.

PREVENTIVE MEDICINE AND PUBLIC HEALTH *Second Edition*

Preventive medicine is incorporated here in *clinical* medicine—and not as an isolated block of knowledge. Preventive methods are shown throughout as a part of the daily rounds of clinical activities (with actual case histories). 603 pp. $7.50

Gaylord W. Anderson, M.D., Dr.P.H. and Margaret G. Arnstein, R.N., M.P.H.

COMMUNICABLE DISEASE CONTROL *Third Edition*

Deals with the control of communicable disease in general, and with the prevention and treatment of particular diseases. Special emphasis is given to control measures of health departments, schools, visiting nurse associations and other agencies. 526 pp. $6.50

. . . . . NEW VITAL BOOKS COMING SOON . . . . . .

W. G. Smillie, M. D.

PUBLIC HEALTH: ITS PROMISE FOR THE FUTURE

Probably $7.50

World Health Organization

INFANT METABOLISM SEMINAR of the World Health Organization

Prob: $10.00

at your bookstore or write

The Macmillan Company

60 FIFTH AVENUE, NEW YORK 11, N.Y.

MANAGEMENT of
ADDICTIONS

Edited by EDWARD PODOLSKY, M.D.

Editor of War Medicine and Music Therapy

In the present volume addictions to alcohol and various drugs are discussed by leading medical authorities in the field. The mechanisms of addiction are thoroughly explored and methods of therapy are presented in detailed form. While this book is intended primarily for physicians, it will also prove of interest to psychologists, sociologists, and others interested in the problem of addiction.

ALCOHOL ADDICTION

Psychodynamics in the Excessive Drinking of Alcohol, *by J. W. Higgins.*

A Pragmatic Approach to the Control of "Chronic Alcoholism", *by C. J. Katz.*

On "Therapeutic" Success in Alcoholism, *by G. Lolli.*

The Concept of Genetotrophic Disease, *by R. J. Williams, E. Beerstecher, Jr., and L. J. Berry.*

Nutrition and Alcoholism: The Genetotrophic Approach, *by Ruth Woods.*

Alcoholism: Recent Advances in Its Treatment, *by H. W. Lovell and J. W. Tintera.*

Constructive Teamwork in the Treatment of Alcoholism, *by J. Thimann.*

Psychotherapy of the Problem Drinker, *by B. H. Gottesfeld and H. L. Yager.*

The Treatment of Alcoholism with Adrenal Steroids and ACTH, *by W. L. Voegtlin.*

Endocrine Treatment of Alcoholism, *by J. W. Tintera and H. W. Lovell.*

The Use of Mebaral in the Treatment Of Chronic Alcoholism, *by J. A. Smith and W. T. Brown.*

An Evaluation of the Aversion Treatment of Alcoholism, *by F. Lemere and W. L. Voegtlin.*

Carbon Dioxide Maintenance Therapy in Neuroses and Alcoholism (Preliminary Report), *by A. A. LaVerne and M. Herman.*

Calcium Therapy in the Treatment of Alcoholism, *by C. C. O'Brien.*

Hospital and Ambulatory Cases of Alcoholism: Intensive Calcium Therapy, *by C. C. O'Brien.*

Sedation of Alcoholic Patients with Nonsedative Drugs: A Preliminary Report, *by J. Thimann.*

A New Adjuvant in Postalcoholic Psychomotor Agitation, *by M. D. Kissen, H. E. Yaskin, H. F. Robertson, D. R. Morgan.*

Tolserol in the Treatment of the Postalcoholic State, *by M. Herman and A. S. Efron.*

A Clinical Evaluation of Tetraethylthiuramdisulphide (Antabuse) in the Treatment of Problem Drinkers, *by K. M. Bowman, A. Simon, C. H. Hine, E. A. Macklin, G. H. Crook, N. Burbridge, K. Hanson.*

Disulfiram as a Sedative in Alcoholism, *by F. Lemere.*

Psychological Factors in the Conditioned-Reflex Treatment of Alcoholism, *by F. Lemere.*

Treatment of Chronic Alcoholism by Intravenous Barbiturates, *by F. Lemere and P. O'Hollaren.*

Conditioned-Reflex Treatment of Alcoholism, *by J. Thimann.*

Thiopental U. S. P. (Pentothal®) Treatment of Alcoholism, *by F. Lemere and P. O'Hollaren.*

Hypnotherapy in the Treatment of Alcoholism, *by A. Paley.*

The Alcohol Problem, *by O. Diethelm.*

DRUG ADDICTION

Hypoadrenocorticism in Alcoholism and Drug Addiction, *by H. W. Lovell and J. W. Tintera.*

An Experiment in Group Psychotherapy with the Narcotic Addict, *by McClain Johnston.*

A Study of Results in Hospital Treatment of Drug Addictions, *by R. G. Knight and C. T. Prout.*

Drug Addictions (A Review), *by R. B. Arora and V. N. Sharma.*

Treatment of Drug Addiction: Preliminary Report, *by E. Y. Williams.*

Morphine Withdrawal in Addicts by the Method of Prolonged Sleep, *by G. M. Schlomer.*

Benadryl—Its Uses in the Narcotic Withdrawal Syndrome and Other Conditions, *by M. Vaisberg.*

Use of Electric-Convulsive Therapy in Morphine, Meperidine and Related Alkaloid Addictions, *by F. B. Thigpen, C. H. Thigpen and H. M. Cleckley.*

The Problem of Narcotic Drug Addiction, *by M. J. Pescor.*

Indexed $7.50

Special student bulk rate on 10 or more.

PHILOSOPHICAL LIBRARY, *Publishers*

15 East 40th St., Desk 536 **New York 16, N. Y.**

Expedite shipment by prepayment

Indispensable Classics

THE PUBLIC HEALTH NURSE AND HER PATIENT

By Ruth Gilbert, R.N. "A book which should be read and reread, and marked and pondered over and turned to again and again . . . a book which can be read with pleasure as well as with rich reward."—*American Journal of Public Health.* "The characteristics that made the first edition so valuable have been retained, and the material has been brought up to date and adapted to a growing profession which is trying to meet new needs."—*American Journal of Nursing.*

Revised edition, Second printing, $3.75

PUBLIC HEALTH IS PEOPLE

Edited by Ethel L. Ginsburg. How the worker can promote mental health in the community through everyday activities with emphasis on the human side of the problem and proper training in professional schools: administration, intra-staff relationships, community relationships, clinical services are all covered in this invaluable aid. *$1.75*

COMMUNITY HEALTH ORGANIZATION

Edited by Ira V. Hiscock. Completely revised up-to-date edition of a standard handbook of administration and procedure. *Fourth Edition, 1950, $2.75*

MILK AND FOOD SANITATION PRACTICE

By H. S. Adams. A practical text in the field of environmental sanitation: what should be done and how to do it. *$3.25*

OFFICE MANAGEMENT FOR HEALTH WORKERS

By Francis King and Louis L. Feldman. The principles of established office practice adapted to the needs of a health department or voluntary agency. *$2.25*

NURSING IN COMMERCE AND INDUSTRY

By Bethel J. McGrath, R.N. Presents sound policies and procedures of organization and administration. *$3.00*

SNOW ON CHOLERA: A REPRINT OF TWO PAPERS

By John Snow, M.D. Snow's brilliant investigation of the method of transmission of cholera commands admiration as a model of patient and clear-sighted search for the ways in which disease is spread. *$3.00*

Buy

A COMMONWEALTH FUND BOOK
At Your Bookstore, or
HARVARD UNIVERSITY PRESS
Cambridge 38 Massachusetts

Recent Books

THE MEANING OF SOCIAL MEDICINE

By Iago Galdston, M.D. "Fascinating, though in parts rather difficult reading, this whole book is essentially a multidimensional definition and defense of what the author calls 'social medicine.' . . . Galdston's challenging argument deserves wide reading—especially by those inclined to epidemiology. From this may arise a new look and vigor in public health research."—*American Journal of Public Health.* *$2.75*

CORONARY HEART DISEASE IN YOUNG ADULTS

A MULTIDISCIPLINARY STUDY

By Menard M. Gertler, M.D., Paul D. White, M.D., and others. This study of a group of 100 young patients (under age 40) correlated with information from a matched control group and also from a random control sample indicates a greater proclivity to coronary heart disease in individuals whose parents or siblings experienced the disease, and in those with a particular body build: the endomorphic mesomorph. "Explorations like that reported here should intrigue the public health expert as well as the cardiologist."—*American Journal of Public Health.* *$5.00*

ATLAS OF EXFOLIATIVE CYTOLOGY

By George N. Papanicolaou, M.D. "A superb accomplishment by both author and publisher. . . . There are 24 plates of colored drawings and 12 plates of photomicrographs in color. . . . The book is more than an atlas, and because of this, its utility is broadened considerably. It contains detailed instructions on the collection, processing and staining of the wide variety of biologic materials to which cytologic study has been applied. The application of exfoliative cytology to the study of cancer, endocrine and metabolic disorders is still new. . . . This book is a milestone in the development of this important and rapidly expanding field of cytologic diagnosis."—*American Journal of Public Health.* *$18.00*

COMING SOON

June 6

PERINATAL MORTALITY IN NEW YORK CITY

By The New York Academy of Medicine, Analyzed and Reported by Schuyler G. Kohl, M.D.

Early May

AIRBORNE CONTAGION AND AIR HYGIENE

An Ecological Study of Droplet Infections

By William Firth Wells. **$6.00**

Buy

A COMMONWEALTH FUND BOOK

At Your Bookstore, or

HARVARD UNIVERSITY PRESS

Cambridge 38 Massachusetts

Just Published

MEDICAL CARE FOR TOMORROW

By *Michael M. Davis*

Chairman, Executive Committee, Committee for the Nation's Health, Inc.

Here is a definitive statement of the present status and future prospects of public and private medical services for the American people. Dr. Davis explains what has been happening in medical care since the beginning of this century, fairly presents both sides of current controversies, evaluates proposed health legislation and other suggested solutions, and offers significant, comprehensive proposals of his own for the future.

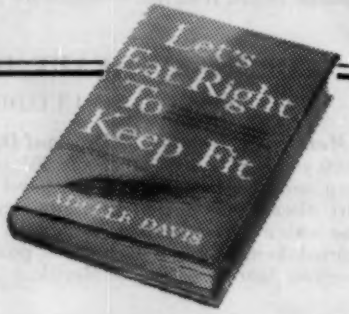
"No more important book on medical economics and administration, inclusive of the great problems of the adequacy of medical care and distribution, has been written."—SEYMOUR HARRIS, Professor of Economics, Graduate School of Public Administration, Harvard University.

$6.50 at your bookstore or from

HARPER & BROTHERS

49 E. 33rd St. N. Y. 16

A REALLY PRACTICAL GUIDE TO THE PRINCIPLES AND REWARDS OF SOUND NUTRITION



Let's Eat Right To Keep Fit

By ADELLE DAVIS

"Adelle Davis is the only author I know who can present authoritative, accurate information concerning vital, complicated, human nutritional processes in such an interesting and fascinating manner. Even as a physician . . . I learned much from this book.

"Non-medical people are constantly asking for more and more reliable technical knowledge expressed in direct yet simple, understandable language. This is it as far as food, diet and human nutrition are concerned. It will serve as a good review for . . . the physician and will bring the nutritionist up-to-date. . . . The book is well documented and is an excellent source of reference material.

"If the principles set forth in this book were followed by most people, I believe a greater advancement in health would result than from any other occurrence in the history of mankind. It surely represents the basis of preventive medicine."—From the foreword by W. D. CURRIER, M.D., *National Secretary, American Academy of Nutrition*

$3.00 at all booksellers

HARCOURT, BRACE AND COMPANY
New York 17

JOSIAH MACY, JR. FOUNDATION

Announces four new books

ADMINISTRATIVE MEDICINE, Transactions of the Second Conference.
Edited by George S. Stevenson, National and International Consultant, National Association for Mental Health.

This is a lively and stimulating report on the administrative process in medicine and allied fields by specialists in administration, medical education, nursing, labor and sociology. *$3.00*

COLD INJURY, Transactions of the Third Conference.
Edited by M. Irené Ferrer, Assistant Professor of Clinical Medicine, Columbia University College of Physicians and Surgeons.

New data on hypothermia including the interrelationships of circulatory and metabolic factors, fat distribution and respiratory quotient, thermal demands of the environment, and diet and survival are given here in an informal manner. *$4.50*

GESTATION, Transactions of the First Conference.
Edited by Louis B. Flexner, Professor of Anatomy, University of Pennsylvania School of Medicine.

This is the first volume from a new series of conferences and deals with the functional role, the comparative anatomy and histology of the placental membrane, and sugar transport in the ungulate placenta. *$5.00*

NEUROPHARMACOLOGY, Transactions of the First Conference.
Edited by Harold A. Abramson, Assistant Professor of Physiology, Columbia University College of Physicians and Surgeons.

Investigators interested in the effects of pharmacological agents on circulation and metabolism of the brain and of anesthesia on its electrical activities will find much of value in this new volume. *Price to be announced.*

Soon to be released . . .

PROBLEMS OF CONSCIOUSNESS, Transactions of the Fifth Conference.
Edited by Harold A. Abramson, Assistant Professor of Physiology, Columbia University College of Physicians and Surgeons.

To be ready in mid-summer of 1955.

Standing orders will be accepted now for delivery upon publication

JOSIAH MACY, JR. FOUNDATION PUBLICATIONS

SALES OFFICE: P. O. BOX 575, PACKANACK LAKE, NEW JERSEY

Please make checks payable to Josiah Macy, Jr. Foundation

"... of tremendous value ..."

Contains:

224 METHODS for the determination of

115 SUBSTANCES in various biological fluids includes

115 CALIBRATION CURVES and

6 CHARTS. No fewer than

339 TESTS can be performed from the

728 loose-leaf PAGES of this manual, printed in large, clear type on paper especially selected to stand constant laboratory handling, and bound in a handsome, 7-ring, gold-embossed binder

Price $30.00 per Copy

Even if you use only a few of these many procedures, this manual will pay for itself many times over in a very short period. *Order your copy now* or send for FREE DESCRIPTIVE LITERATURE.

STANDARD SCIENTIFIC SUPPLY CORP.
34 W. 4th St., New York 12, N. Y.

Please send ..... copies of Fister's Manual of Standardized Procedures for Spectrophotometric Chemistry, at $30.00 each.

☐ Payment herewith ☐ Bill us

NAME .....

ADDRESS .....

.....

THE MANUAL of STANDARDIZED PROCEDURES for SPECTROPHOTOMETRIC CHEMISTRY

By HAROLD J. FISTER

Never before has a book like this been published especially for clinical and biological technicians . . . a book that will save hundreds of hours and hundreds of dollars in preparing most procedures for spectrophotometric chemistry.

Outlines, in detail, a step-by-step procedure for performing each determination. All methods were painstakingly worked out on the Coleman spectrophotometer, but are adaptable to nearly every instrument marketed today, including Beckman, Brociner-Mass, Klett-Summerson, Leitz, Hellige, Cenco, Lumetron and Evelyn.

Includes only the latest and most approved clinical methods . . . accurate, easily applicable, simple. All methods were proved under actual working conditions by independent authorities.

"it will insure the success of the particular colorimetric procedure."
Stanley Levey, American Journal of CLINICAL PATHOLOGY

" . . . of invaluable help to all workers in clinical laboratory methods and we recommend it highly."
R. B. H. G., The LABORATORY DIGEST

". . . adapted from the best or better procedures in the literature."
Roy W. Bonsnes, The CLINICAL CHEMIST

"The methods . . . incorporate the most recent improvements and modifications of the original procedure."
Barry Commoner, SCIENCE

". . . voluminous, practical laboratory manual . . . valuable to any clinical laboratory."
Norris W Rakestraw, the Journal of CHEMICAL EDUCATION

". . . written in a very clear and concise way, with all the individual reagents and steps in the procedures numbered and well separated for easy reading."
M. G. Mellon, ANALYTICAL CHEMISTRY

STANDARD SCIENTIFIC SUPPLY CORP., Publishers
34 West 4th Street, New York 12, N. Y.

★ Books for Public Health Workers

★ ★ MOSQUITOES

Their Bionomics and Relation to Disease

WILLIAM R. HORSFALL

JUST PUBLISHED. A complete summary of the information now available on the bionomics of mosquitoes. Presents the combined results of research by sanitarians, entomologists, physiologists, and others, in systematic form. The material is arranged according to the accepted taxonomic classifications. General information on the subfamily as a whole and on each genus precedes detailed treatment of particular species. An indispensable reference for those concerned with the control of malaria and other diseases carried by mosquitoes. **$16**

HEALTH IN THE ELEMENTARY SCHOOL

Herbert Walker. Also new. Designed for those concerned with the health care of children, this volume presents principles and practices of public health, covering such problems as conservation of vision and hearing, control of communicable diseases, procedures in health guidance, school and community relationships, etc. **$4.00**

DEAF CHILDREN IN A HEARING WORLD

Miriam Forster Fiedler. Gives definite suggestions for helping the hearing-handicapped child to help himself. Covers adaptability to normal surroundings, personality adjustment, educational needs. Includes case histories of 11 children. **$5**

REHABILITATION OF THE HANDICAPPED

William H. Soden. Brings under one cover accounts of modern procedures used successfully in the rehabilitation of amputees, alcoholics, polio victims, the aged and infirm, etc. 38 articles by authorities, including 21 by physicians. **$6**

UNDERSTANDING OLD AGE

Jeanne G. Gilbert. Fully discusses emotional, physiological, and sexual changes in later life, with emphasis on modern treatment for mental and physical disorders in the aging process. Offers practical ways of retarding decline and developing neglected potentials, based on advances in psychosomatic medicine. **$5**

THE TROUBLED MIND

Beulah C. Bosselman. A concise, lucid account of psychological and emotional development, offering a sound basis for early recognition of maladjustment. Stresses the importance of preventive and supportive therapy by professionals without special training. **$3.50**

DIABETIC'S HANDBOOK

Anthony M. Sindoni, Jr. Gives clear, simple answers to practically every pertinent question asked by diabetic patients. Offers suggestions for making dieting more attractive and the diabetic's regimen more manageable. Outlines tests and general care. **$3**

RECOVERY FROM APHASIA

Joseph M. Wepman. Completely describes the therapy of aphasic disorders. Based on wide clinical experience, book explains the relation of brain injury to the aphasic's loss of ability to speak or understand; describes symptoms and behavior difficulties following such injuries. **$5.50**

• *Send for your copies. Address Dept.: PH-1*

THE RONALD PRESS COMPANY • 15 E. 26th St., New York 10

Now ready—

STUDYING YOUR COMMUNITY

***By* Roland L. Warren**

This book, published in May, will serve with even greater adequacy the many needs met by Colcord's *Your Community*, published in 1939. It is a working manual for both laymen and those engaged in some branch of community service who want to find out just what their community is, what it does, what it has neglected to do, and what its facilities and assets are for meeting new needs or solving today's problems. Annotated questions lead to pertinent information on health, education, recreation, child welfare, housing, as well as such timely topics as civil defense, adult education, social insurance, juvenile delinquency.

6 x 9 385 pages 1955 $3.00

SOCIAL SCIENCE IN MEDICINE

***By* Leo W. Simmons and Harold G. Wolff**

A sociologist and a noted medical authority combine their skills to show that the cause of physical illness and a patient's chance of recovery are often related to such personal and social factors as family problems, job difficulties, economic insecurity, religion, and even hospital atmosphere and personnel. They report how newer developments in the social sciences can supplement medical techniques in the treatment of disease.

6 x 9 254 pages 1954 $3.50

CULTURAL DIFFERENCE AND MEDICAL CARE

***By* Lyle Saunders**

This book explores the difficulties inherent in supplying "Anglo" health services and medical care to the 2½ million Spanish-speaking people living in the American Southwest. Here is evidence that one of the skills needed by anyone working with the Spanish-speaking or with any people of another culture is skill in establishing mutually satisfying relationships. While its examples are drawn from medicine and from this culturally distinct population, its principles apply to any cultural or sub-cultural group in any geographic setting.

6 x 9 317 pages 1954 $4.50

RUSSELL SAGE FOUNDATION

505 Park Avenue **New York 22, N. Y.**

Standard Methods

for the Examination of Water, Sewage, and Industrial Wastes

Tenth Edition—50th Anniversary

Practically every method has been drastically revised. Particular attention has been given to the use of spectrophotometric and photometric procedures. The organization of the text has been greatly improved and typography has been designed for greater ease in locating information desired. The changes and additions in this Edition are the largest to be noted in any revision. The length of the text is almost doubled, increasing from 252 pages to 497. Figures have been increased from 20 to 57. A 20-page index will prove a boon.

Prepared jointly by the American Public Health Association, American Water Works Association, and the Federation of Sewage and Industrial Wastes Associations, the volume is divided into six parts:

I. Physical and Chemical Examination of Natural and Treated Waters in the Absence of Gross Pollution
II. Physical and Chemical Examination of Sewage, Treatment Plant Effluents, and Polluted Waters
III. Physical and Chemical Examination of Industrial Wastes
IV. Physical and Chemical Examination of Sludges and Bottom Sediment in Sewage Treatment Processes and in Polluted Rivers, Lakes, or Estuaries
V. Routine Bacteriologic Examinations of Water to Determine Its Sanitary Quality
VI. Biological Examination of Water, Sewage Sludge, or Bottom Materials

Additions to the text include:

1. Discussion of correctness of analysis, precision, and accuracy
2. Review of statistics for analysts
3. Nomograph for alkalinity and CO_2
4. Complexiometric EDTA titration method for hardness
5. Spectrophotometric and photometric methods for color
6. Essentially a new procedure for cyanides
7. Membrane filter technic
8. Twelve full-page figures showing typical plankton and bottom dwelling organisms
9. Parts I, II, III, and IV are arranged fully in alphabetical order

Special price for members if cash is sent with order, $6.50. Such orders should be sent to the organization of membership for verification and forwarding.

522 pp. 1955 $7.50, List Price

Published by:

AMERICAN PUBLIC HEALTH ASSOCIATION, INC.
1790 Broadway — New York 19, N. Y.

American Public Health Association, Inc.
1790 Broadway
New York 19, N. Y.

Please send to me at the address given below ..... copies of the Tenth Edition, Standard Methods for the Examination of Water, Sewage, and Industrial Wastes.

I am a member of the American Public Health Association:

.... I enclose $6.50 per copy. .... Please bill me @ $7.50 per copy.

Ship to: .....

.....

.....

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.

1790 Broadway at 58th Street New York 19, N. Y.

Publications of the A.P.H.A.

American Journal of Public Health and the Nations Health. Single copies..... $1.00
A. P. H. A. Year Books..... $1.50
An Appraisal Method for Measuring the Quality of Housing: A Yardstick for Health Officers, Housing Officials and Planners: Part I. Nature and Uses of the Method. (1945). 71 pp..... $1.00
Part II. Appraisal of Dwelling Conditions. Vol. A—Director's Manual, $3.00. Vol. B—Field Procedures, $2.00. Vol. C—Office Procedures, $2.00 (1946); or three for $6.00
Part III. Appraisal of Neighborhood Environment. (1950). 132 pp..... $3.00
Basic Principles of Healthful Housing. 2d ed. reprinted 1950. 34 pp..... .50
Care of Laboratory Animals. 1954. 32 pp. .75
Control of Communicable Diseases in Man. 8th ed. 1955. 212 pp..... .60
Diagnostic Procedures and Reagents. Technics for the Laboratory Diagnosis and Control of the Communicable Diseases. 3rd ed., 1950. 589 pp..... $6.00
Diagnostic Procedures for Virus and Rickettsial Diseases. 1948. 347 pp..... $4.50
Directory of Public Health Statisticians (5th ed.) 1953. 48 pp..... $1.00
Evaluation Schedule. For use in the study and appraisal of community health programs..... .70
General Medical Care Programs in Local Health Departments. Milton Terris and Nathan Kramer. 1951. 129 pp..... .60
Glossary Water and Sewage Control Engineering. 1949. 274 pp. Paper cover..... $1.00
Guide for the Medical and Public Health Nursing Supervision of Tuberculosis Cases and Contacts. 1953. 24 pp..... .30
Guide to a Community Health Study. Revised 1955. 64 pp..... $1.00
Health Practice Indices 1947–1948. A Collection of charts showing the range of accomplishments in various fields of community health service. 90 pp..... $1.00
Health Supervision of Young Children. 180 pp. $2.00
Housing An Aging Population. 1953. 92 pp... $1.00
Methods for Determining Lead in Air and in Biological Materials. 1944. 41 pp..... .50
Occupational Lead Exposure and Lead Poisoning. 1943. 67 pp..... .50
Panum on Measles. By P. L. Panum (Translation from the Danish). Delta Omega ed., 1940. 111 pp..... $2.50
Proposed Housing Ordinance 1952. 24 pp.... .75
Proposed Sanitary Code. Part III of a Study of Sanitation Services..... $2.50
Public Health Career Pamphlets:
Public Health—A Career with a Future. Revised edition, 1954..... .25
Industrial Hygiene 1949
The Engr. and Sanitarian 1949 } 1–5 copies free; 6–99 copies ea. 10¢
Statistician 1950
Selected Papers of Haven Emerson. 1949. 507 pp..... $3.00
"Shattuck Report", The. Report of the Sanitary Commission of Massachusetts: 1850. 321 pp... $4.50
Standard Methods for the Examination of Dairy Products. 10th ed., 1953. 324 pp.... $4.75
Microbiological Examination of Milk and Cream: Chapter 2 Only. 64 pp..... .75
Photographic Sediment Chart. Under Revision.
Standards for Healthful Housing:
Planning the Neighborhood. 1948. 89 pp... $2.50
Planning the Home for Occupancy. 1950. 90 pp. $2.50
Construction and Equipment of the Home. 1951. 78 pp..... $2.50
The set, handsomely boxed..... $7.50
Standard Methods for the Examination of Water, Sewage and Industrial Wastes. 10th ed. 1955. 497 pp..... $7.50
Special price to members of A.P.H.A., A.W.W.A., & F.S.I.W.A. on prepaid orders only for a single copy..... $6.50
Swimming Pools and Other Public Bathing Places. Recommended Practice for Design, Equipment and Operation of, 1949. 56 pp..... .55
35 Year Index of the American Journal of Public Health. Years 1911 to 1945. 340 pp. Buckram Ed. $7.00. Paper Ed..... $3.75
What's the Score? Committee on Administrative Practice. A.P.H.A. 1950. 52 pp..... .50

Order from the Book Service — Advance Payment is Requested

Reprints from the American Journal of Public Health

Bacterial Cleanability of Various Types of Eating Surfaces. [February, 1953.] 12 pp. 25¢.
Bibliography of Public Health Motion Pictures and Film Strips. [April, 1950.] 4 pp. 15¢.
Congressional Hearings on Water-Borne Fluorides. [May, 1952.] 5 pp. 15¢.
Improvement of Local Housing Regulation Under the Law. [November, 1942.] 16 pp. 25¢.
Lemuel Shattuck—Still a Prophet. [February, 1949.] 27 pp. 25¢.
The Local Health Department—Services and Responsibilities. An official statement of the American Public Health Association. [1950.] 8 pp. 10¢.
On the Use of Sampling in the Field of Public Health. [June, 1954.] 24 pp. 40¢.
Present Status of the Control of Air-Borne Infections. [January, 1947.] Report of the Subcommittee for the Evaluation of Methods and Control of Air-Borne Infections. 10 pp. 25¢.
Principles for Consideration in Judging the Probable Effectiveness of Federal Legislation Designed to Improve the Health of Children of School Age. [April, 1948.] 4 pp. 10¢.
Recent Observations of the British National Health Service. [May, 1949.] 6 pp. 15¢.
State Health Department—Services and Responsibilities. [February, 1954.] 20 pp. 35¢.
Suggested Standards for Health Services in Secondary Schools. [May Year Book 1952.] 12 pp. 15¢.
Ventilation and Atmospheric Pollution. [July, 1943.] 7 pp. 15¢.
Viability of *Escherichia coli* in Acid Mine Waters. [July, 1952.] 5 pp. 10¢.

Order from the Book Service — Advance Payment is Requested

WILEY BOOKS

WATER SUPPLY and WASTE-WATER DISPOSAL

By GORDON MASKEW FAIR, Harvard University, and JOHN CHARLES GEYER, The Johns Hopkins University

Set forth here for the first time are many of the important advances toward reducing water sanitation to an orderly process of calculation. The first half of the book deals with collection, distribution and removal. The second half covers the treatment of water and waste water. There's a special chapter on Water Chemistry by John Carrell Morris, Harvard University.

1954 973 pages Illustrated $15.00

SEWERAGE and SEWAGE TREATMENT

SEVENTH EDITION
By HAROLD E. BABBITT, University of Illinois

Modernized from cover to cover, "Babbitt" still reflects the original authority and practicality which have made it indispensable to sanitary engineers for 30 years. It now treats everything from the prevention of stream pollution to disposal of radio-active wastes.

1953 674 pages Illustrated $8.00

HEALTHIER LIVING

By JUSTUS J. SCHIFFERES, Ph.D.
Health Education Council

Here is a refreshing approach to personal and community health. In colorful, precise language, Dr. Schifferes covers sex adjustment problems, mental health, personality development, marriage and family living, and a host of other topics. Accurate and compelling illustrations complement text material.

1954 928 pages Illustrated $6.75

Send for your ON-APPROVAL copies today!

JOHN WILEY & SONS, Inc.

440 Fourth Avenue New York 16, N. Y.

Williams & Wilkins

HOPKINS & SCHULZE
The Practice of Sanitation

2nd edition

464 pp. 131 figs. $8.00

Sanitation engineers discuss the problems of public health. Topics range from administration programs to rodent control. Convenient organization of subjects plus an index aid in quick selection of particular topics.

BOWER
The Acute Phase of Poliomyelitis and Its Complications

261 pp. 64 figs. $6.50

A practical manual of diagnosis and treatment based on new concepts of polio care formulated at Los Angeles County Hospital.

NABARRO
Congenital Syphilis

470 pp. 95 figs. $10.00

A detailed survey. Discusses VD teaching and importance of long-range treatment records.

Nutrition Classics

STERN'S Applied Dietetics

300 pp. 12 figs. $5.00

EDDY: Vitaminology

370 pp. 37 figs. $6.00

THE WILLIAMS & WILKINS CO.
Mt. Royal and Guilford Aves.
Baltimore 2, Maryland

Please send the following. I enclose full payment to save postage and handling charges.

_____

_____

NAME_____

ADDRESS_____

_____

PH 4

CHEMICAL METHODS IN INDUSTRIAL HYGIENE

By Frederick H. Goldman, *Bureau of Public Health Engineering, Government of the District of Columbia,* and *Morris B. Jacobs, Department of Air Pollution Control, City of New York.* 1953. 284 pages, 23 illus., 7 tables. $3.75

INDUSTRIAL HYGIENE AND TOXICOLOGY

In two volumes.

Edited by Frank A. Patty, *Director, Industrial Hygiene Service, General Motors Corporation, Detroit, Mich.* VOLUME I: 1948. 559 pages, 119 illus., 94 tables. $13.50. VOLUME II: 1949. 634 pages, 7 illus., 167 tables. $16.50.

THE CHEMISTRY AND TECHNOLOGY OF FOOD AND FOOD PRODUCTS

Second completely revised and augmented edition in three volumes. Prepared by a group of specialists under the editorship of Morris B. Jacobs, *Adjunct Professor of Chemical Engineering, Polytechnic Institute of Brooklyn.* VOLUME I: 1951. 857 pages, 78 illus., 110 tables. $15.00. VOLUME II: 1951. 964 pages, 54 illus., 397 tables. $18.00. VOLUME III: 1951. 837 pages, 175 illus., 62 tables. $18.00.
Price for complete set: $45.00

THE LIPIDS—*In three volumes.*

By Harry J. Deuel, Jr., *University of Southern California, Los Angeles, Calif.* Volume I: CHEMISTRY. 1951. 1008 pages, 102 illus., 341 formulas, 183 tables. References. $21.00. Volume II: BIOCHEMISTRY—Digestion, Absorption, Transport, and Storage. 1955. 948 pages, 31 illus., 139 tables. References. $25.00. Volume III: BIOCHEMISTRY—Synthesis, Oxidation, Metabolism, and Nutritional Importance. *In preparation.*

INDUSTRIAL OIL AND FAT PRODUCTS

Second edition, completely revised and augmented.

By Alton E. Bailey, *Director of Research, The Humko Company, Memphis, Tenn.* 1951. 922 pages, 164 illus., 133 tables. $16.50

STATISTICAL METHODS FOR CHEMICAL EXPERIMENTATION

By W. L. Gore, *E. I. du Pont de Nemours & Company, Wilmington, Delaware.* 1952. 224 pages, 20 illus., 47 tables. $3.50

For further details, Write for our catalogue

INTERSCIENCE PUBLISHERS, INC.
250 Fifth Avenue, New York 1, N. Y.

New (2nd) Edition

Pelton and Wisan's

Public Health Dentistry

"An up-to-date, clear and well-organized statement of the present capacities of dental public health" is an apt description of the *New (2nd) Edition* of this useful book.

It contains one of the finest critiques in print on the entire subject of fluoridation. There are completely workable patterns and procedures for setting up and operating dental health programs in any community—either rural or urban.

Public Health Administrators, Dentists and Physicians interested in Public Health Medicine will find valuable and interesting information on such topics as: surveys and evaluation of dental programs, dental needs and resources, prevention and control of dental caries and other dental diseases, administrative principles in dental public health, the practice of dental public health, and dental health education.

Edited by WALTER J. PELTON, B.S., D.D.S., M.S.P.H., Dental Director, Chief, Division of Dental Resources, Bureau of Medical Services, United States Public Health Service, Washington, D.C.; and JACOB M. WISAN, D.D.S., M.S.P.H., Chief, Dental Health Section, Department of Public Health, Philadelphia, Pa. In collaboration with JOHN T. FULTON, D.D.S.; JOHN W. KNUTSON, D.D.S., Dr.P.H.; and ALBERT L. RUSSELL, D.D.S., M.P.H. 282 pages, 6" x 9¼", illustrated. $6.50.
New (2nd) Edition!

W. B. SAUNDERS COMPANY • West Washington Square Philadelphia 5

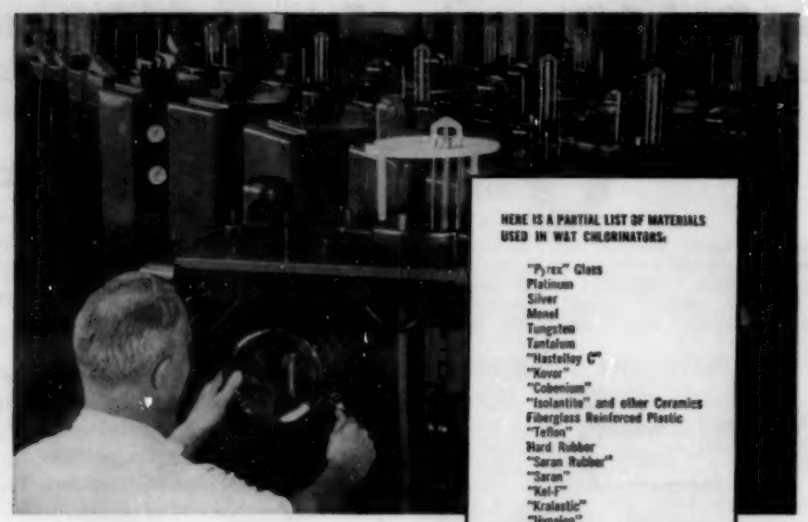
Send me **Pelton & Wisan's Public Health Dentistry,** *New (2nd) Edition,* $6.50

☐ My check or money order is enclosed. ☐ Send C.O.D.

Name .....

Address .....

AJPH



HERE IS A PARTIAL LIST OF MATERIALS USED IN W&T CHLORINATORS:

"Pyrex" Glass
Platinum
Silver
Monel
Tungsten
Tantalum
"Hastelloy C"
"Kovar"
"Cobenium"
"Isolantite" and other Ceramics
Fiberglass Reinforced Plastic
"Teflon"
Hard Rubber
"Saran Rubber"
"Saran"
"Kel-F"
"Kralastic"
"Hypalon"
"Uscolite"
Unplasticized Polyvinyl Chlorides
Plasticized Vinyls
"Lucite"
"Plexiglas"

Where glass is needed, glass is used . . .

How well chlorination equipment does its job depends not only on proper design but on the selection of the right material for each part of the assembly.

In W&T equipment, every part is employed where it best suits the purpose for which it is intended. And every part gives good service because it is made of the right material for the job. Glass, metals, ceramics, and many types of plastics are used throughout Wallace & Tiernan's complete line of chlorinators — and each is selected for its ability to give you the most satisfactory operation under your plant conditions.

Since 1913, W&T research has consistently sought out new designs, principles and materials. Every new development is placed under rigid field tests to prove it can meet the exacting standards that dependable and economical chlorination demands.

When you depend on W&T equipment, you have the assurance that 40 years of experience in the chlorination field is being used to bring you the best in design, parts, and materials — selected and tested specifically to fit the need.

2-94

"Make Your First Choice Equipment That Lasts"

WALLACE & TIERNAN INCORPORATED
25 MAIN STREET, BELLEVILLE 9, NEW JERSEY

American Journal of

PUBLIC HEALTH

and the Nation's Health

Official Monthly Publication of the American Public Health Association, Inc.

Volume 45 April, 1955 Number 4

A Bookshelf on Foods and Nutrition

ROBERT E. SHANK, M.D., F.A.P.H.A., and EMIL M. MRAK, Ph.D.

Nutrition permeates so fundamentally so many of the services that constitute the modern public health program that the science becomes an essential part of the professional armamentarium of practically everyone in the health field. This annual bookshelf, then, is addressed not solely or even chiefly to the nutritionists among us, but to all. Every discipline will be indebted to the authors for their thorough and comprehensive selection.

Knowledge and information are commodities offered by professional personnel in fields of public health. Their broadest possible dissemination and adaptation in affording practical technics for health promotion and protection and for disease prevention and control are goals to be achieved. The effectiveness of any individual, or of any single program in public health, is in essence determined by the extent of knowledge in the given field. It is essential, therefore, that each worker be properly qualified by training and experience, but equally important that he be alert to developments and new knowledge which apply in his own areas of endeavor. It was, no doubt, with these or similar considerations that the editors of the Journal began the series of articles entitled "Bookshelf."

A knowledge of foods and of nutrition is important in practically all phases of public health activity. In prenatal and infant care diet should be observed and carefully controlled. Growth and development during periods of childhood and adolescence can be optimum only if foods consumed are adequate in quantity and quality. Prevention of endemic goiter, dental caries and the nutritional deficiency diseases is dependent on the provision of specific nutrients in the diet or in the water supply. Deficient food intake may make more likely the occurrence of other diseases, such as tuberculosis. On the other hand, habitual consumption of excessive quantities of food may lead to obesity with its many compromises of health and function. Still other hazards to health exist in the fact that food may be a carrier of agents producing disease, a consideration which makes control of food processing, distribution, storage and preparation a factor of great importance to the health of individuals and of larger population units. Rapid growth of population, economic

This is a Special Review Article prepared at the request of the Editorial Board. Dr. Shank is professor of preventive medicine and head of the department, Washington University School of Medicine, St. Louis, Mo. Dr. Mrak is professor of food technology at the University of California, Davis, Calif.

stresses, and adverse climatic conditions limit the availability and variety of foods in such a way that the health of large segments of the population is seriously impaired. It, therefore, becomes the responsibility of health agencies to advise and cooperate in the development of agricultural policies which will allow for the ready availability and equitable distribution of food products. The broad significance of nutrition to health makes it imperative that all health personnel be informed and have ready access to reference material in matters of nutrition.

Since food is of such importance to health, and since the satisfactions of eating are integral to the well-being of individuals, it is not surprising that the literature abounds with all types and kinds of writings on nutrition. On one side are represented the authoritative statements and descriptions of the knowledge and advances in the field by persons fully qualified as experts by experience and training. On the other hand, there is an almost equal volume deriving from the prejudiced opinions of the misinformed and of cults and food faddists. Perhaps in no other of the health sciences is it so important to differentiate between information and misinformation—between fact and fancy.

The responsibility placed upon the authors in making a selection of reference material in nutrition is a large one. Though others might have made a somewhat different selection, the books and articles referred to are listed because it is felt that each has something important to contribute as source material, and most importantly represents nutritional knowledge in fact rather than in fancy.

General Background

The fundamental and basic concepts of human nutrition derive from the broader sciences of biochemistry and physiology. Best understanding of nutritional principles, therefore, is built upon a background of knowledge of these sciences. However, a number of books are available which present a compilation of the fundamental knowledge and principles of human nutrition. In this category is the book by James S. McLester and William J. Darby, Nutrition and Diet in Health and Disease (Philadelphia, Saunders, 1952, 710 pp., $10). This book is in its sixth edition and has been carefully rewritten to include newer developments within the field. Another important book which has somewhat greater detail of information is that edited by Norman Jolliffe, F. F. Tisdall, and Paul R. Cannon. It is entitled Clinical Nutrition (New York, Hoeber, 1950, 925 pp., $12) and was written for the Food and Nutrition Board of the National Research Council by a group of 36 contributors, each a recognized authority in his own field. Another valuable and authoritative general reference is provided by the papers of 33 contributors in Handbook of Nutrition: A Symposium Prepared Under the Auspices of the Council on Foods and Nutrition of the American Medical Association (2nd ed., Philadelphia, Blakiston, 1951, 717 pp., $4.50). More extensive treatment of essential components of the diet is afforded in Biochemistry and Physiology of Nutrition, which is edited by Geoffry H. Bourne and George W. Kidder and has appeared in two volumes (New York, Academic Press, Vol. 1, 1952, 569 pp., $13; Vol. 2, 1953, 641 pp., $15). Of particular note is chapter 23 of the second volume entitled "Application to Human Nutrition," written by Grace A. Goldsmith.

Detailed discussion of the vitamins and their roles in nutrition is to be found in a multiple-volume work edited by William H. Sebrell, Jr., and Robert S. Harris. The first volume has been published, The Vitamins, Chemistry, Physiology, Pathology (New York, Academic Press, 1954, 676 pp., $16.50). Another valuable synopsis and compendium of

recent developments relating to specific nutrients may be found in Present Knowledge in Nutrition (New York, Nutrition Foundation, Inc., 1953, 122 pp., $2). This booklet was prepared by the editorial staff of Nutrition Reviews and is available in a paper-bound edition at relatively small cost. Still another book should be noted as an important general reference through many editions. This is the book by Henry C. Sherman entitled Chemistry of Food and Nutrition (New York, Macmillan, 1952, 675 pp., $5.50), currently available in its eighth edition.

Other books are concerned not only with the fundamentals of nutrition and the metabolism of food components, but deal as well with the planning of diets and food preparation. Such a book is that by Henry C. Sherman and C. S. Lanford, Essentials of Nutrition (3rd ed., New York, Macmillan, 1951, 454 pp., $4.25). Another has been written by Ernest W. H. Cruickshank, who is regius professor of physiology in the University of Aberdeen, and is entitled Food and Nutrition (2nd ed., Baltimore, Williams and Wilkins, 1951, 443 pp., $6.50). Still other important books of this type are Nutrition in Health and Disease by Lenna F. Cooper, Edith M. Barber, Helen S. Mitchell, and Henderika J. Rynbergen (12th ed., Philadelphia, Lippincott, 1953, 790 pp., $4.50); Nutrition by Margaret S. Chaney and Margaret Ahlborn (4th ed., Boston, Houghton Mifflin, 1949, 448 pp., $3.90); and Nutrition and Diet Therapy by Fairfax T. Proudfit and Corinne H. Robinson (10th ed., New York, Macmillan, 1950, 950 pp., $4).

A number of available journals offer important source material and provide an opportunity for keeping up with newer developments. Because papers dealing with nutrition appear in a variety of scientific and technical journals, the review type periodical is of particular importance in directing the attention of even the relatively well informed to significant new advances. This coverage in the United States is afforded by Nutrition Reviews (New York, Nutrition Foundation, Inc.), and in Great Britain by Nutrition Abstracts and Reviews (Bucksburn, Aberdeenshire, Scotland, Rowett Institute). Still other review periodicals are available which are much more limited in coverage. Representative of this category are Current Research in the Science of Nutrition (New York, Nutrition Foundation, Inc.), and Nutrition News (Chicago, National Dairy Council). The latter is published by an organization representing a segment of the food industry but is impartial and objective in approach. Still other journals afford a medium for publishing the results of research in nutrition. Of particular importance are the Journal of Nutrition (Philadelphia, Wistar Institute of Anatomy and Biology), The American Journal of Clinical Nutrition (133 S. 36th Street, Philadelphia, Pa.), and the British Journal of Nutrition (London, England, Cambridge University Press). Another important type of journal is that published by professional societies. For example, there is the Journal of the American Dietetic Association (Baltimore, American Dietetic Association). The Journal of the American Medical Association (Chicago, American Medical Association) frequently publishes Special Reports from its Council on Foods and Nutrition which present important new information or evaluate common problems of diet and food.

Nutrition and Public Health

Although but little reflection is necessary to indicate the almost unlimited opportunities that exist for the application of nutritional knowledge to the promotion and protection of health, it may be informative and, indeed, stimulating to evaluate the relationships between food and health as considered by a num-

ber of writers. In these may be found reasons for establishing or extending nutrition services in health departments or community agencies. Particularly noteworthy is the section on nutrition and deficiency disease written by William H. Sebrell, Jr., in Rosenau Preventive Medicine and Hygiene, edited by Kenneth F. Maxcy (7th ed., New York, Appleton-Century-Crofts, 1951, 1462 pp., $14). In Textbook of Preventive Medicine, edited by Hugh R. Leavell and E. Gurney Clark (New York, McGraw-Hill, 1953, 629 pp., $8), a chapter is devoted to "Nutrition in Preventive Medicine" and in it are pointed out a variety of opportunities for application of nutritional knowledge to preventive medicine and protection of the public health.

The contents of two symposia offer pertinent basic information. These are Nutrition Fronts in Public Health (No. 3, Nutrition Symposium Series, New York, National Vitamin Foundation, Inc., 1950, 168 pp., $1.50), and Nutrition in the Practice of Medicine (No. 4, Nutrition Symposium Series, New York, National Vitamin Foundation, Inc., 1952, 163 pp., $1.50). Several papers have dealt directly with nutrition services in the health department. Of particular interest among these are "A Modern Nutrition Program in a State Health Department," by Vlado A. Getting (Milbank Memorial Fund Quarterly 25: 256–262, 1947) and "New Types of Activity for Nutrition Services in Public Health" by Walter Wilkins (Ibid. 25: 247–255, 1947). A definitive and informative report may be found in "Nutrition Programs in State Health Departments," (Public Health Reports 65: 411–445, 1950), which was prepared by a committee of the Food and Nutrition Board of the National Research Council. The guide prepared recently by the Subcommittee on Nutrition Practices of the Committee on Administrative Practice of the American Public Health Association should be of great assistance to administrators of public health programs. It is entitled "Nutrition Practices: A Guide for Public Health Administrators" and is to be published by the Association in 1955.

In planning for adequate food intake for an individual or a group, it is essential that information be available concerning the quantities of the essential nutrients which should be afforded in the daily diet if the needs of health are to be met. To serve this purpose a food standard has been proposed and established for the United States by the Food and Nutrition Board of the National Research Council. The most recent revision was published in 1953 under the title of Recommended Dietary Allowances (Washington, D. C., National Academy of Sciences—National Research Council, Publication 302, 1953, 18 pp., 20 cents). These allowances are greater than those which simply avoid the occurrence of nutritional deficiency disease. In other words, they afford a margin of safety. The national food standard of Canada is on a somewhat lower base (Canadian Council on Nutrition, Bulletin on Nutrition 2: 1, 1950). That proposed for Great Britain does not allow for quite so large a safety factor as the American standard but is well above the minimal requirements of nutrients, allowing for good nutrition in the average individual (British Medical Association, Report of the Committee on Nutrition, London, 1950). An international standard for calories has been prepared (Calorie Requirements, FAO Nutritional Studies No. 5, Washington, D. C., Food and Agriculture Organization of the United Nations, 1950, 65 pp., 75 cents). A relatively simple but effective guide to good food intake has been afforded by L. J. Bowser, M. F. Trulsen, and F. J. Stare, A Balanced Diet (New York, Nutrition Foundation, Inc., 1953).

It is necessary that technics be available for evaluation of adequacy of food intake of individuals or groups. Assist-

ance in this regard, as it pertains to analysis of records of food consumption, may be found in Dietary Surveys—Their Technique and Interpretation (FAO Nutritional Studies, No. 4, Washington, D. C., Food and Agriculture Organization of the United Nations, 1949, 108 pp., $1). In this type of analysis, tables of content of the various nutrients in specific foods are required. A reliable source of this information is in Composition of Foods: Raw, Processed, Prepared (Agriculture Handbook No. 8, U.S. Department of Agriculture, Washington, D. C., 1950). Another is available in Food Values of Portions Commonly Used by Anna deP. Bowes and Charles F. Church (7th ed., available from Anna deP. Bowes, Seventh and Delancey Streets, Philadelphia 6, Pa., 1951, 94 pp., $2.25). Description of clinical evaluations and chemical procedures as well as dietary appraisals is included in Nutrition Surveys: Their Techniques and Value (Washington, D. C., Bulletin of the National Research Council, No. 117, 1949, 144 pp., $1.50).

Nutrition and Maternal and Child Health

A very important focus in application of nutrition services is in prenatal and infant care. A very careful review of the available knowledge in this field has been published, Maternal Nutrition and Child Health, An Interpretative Review by Kirsten U. Toverud, Genevieve Stearns, and Icie G. Macy (Washington, D. C., Bulletin of the National Research Council, No. 123, 1950, 174 pp., $2). Other background material may be found in papers by Guttorm Toverud, Winslow T. Tompkins, Dorothy G. Wiehl, and Thomas Primrose in Nutrition in Relation to Health and Disease (New York, Milbank Memorial Fund, 1950, 250 pp., $1). The latest editions of textbooks of pediatrics contain detailed information on infant feeding. Particularly useful material is to be found in Textbook of Pediatrics edited by Waldo E. Nelson (6th ed., Philadelphia, Saunders, 1954, 1581 pp., $15) and in Holt Pediatrics by L. Emmett Holt, Jr., and Rustin McIntosh (12th ed., New York, Appleton-Century-Crofts, 1953, 1485 pp., $15). An important work in this field for many years was Infant Nutrition by Phillip C. Jeans and William McKim Marriott (4th ed., St. Louis, Mosby, 1947, 516 pp., $7).

A wealth of fundamental information is available in the book by Icie G. Macy entitled Nutritional and Chemical Growth in Childhood, Vol. I, Evaluation (Springfield, Ill., Thomas, 1942, 432 pp., $5). Also, an important work dealing with diet and nutrition of children is found in Roberts' Nutrition Work with Children by Ethel A. Martin (rev. ed., Chicago, University of Chicago Press, 1954, 527 pp., $7.50). School Feeding, Its Contribution to Child Nutrition (FAO Nutritional Studies, No. 10, Rome, Italy, Food and Agriculture Organization of the United Nations, 1953, 129 pp., $1) contains much valuable information and many suggestions. The particular problems of the adolescent are dealt with in a paper by Joseph A. Johnston, "Nutritional Problems of Adolescence," in the J.A.M.A. 137:1587–1589, 1948, and by the same author in a recently published book, Nutritional Studies in Adolescent Girls and Their Relation to Tuberculosis (Springfield, Thomas, 1953, 330 pp., $7.50).

Nutrition Education as a Part of Health Education

Information relating to diet and health is very properly a part of any program of health education. If a classroom activity, it is best received and utilized when integrated with other educational programs. If included in a health conference or medical service program, it, also, is most effective when related to the

other important considerations of planning for health. Useful suggestions and technics may be found in Roberts' Nutrition Work with Children, which was referred to above, in Children in Focus—Their Health and Activity—1954 Year Book (Washington, D. C., American Association for Health, Physical Education, and Recreation, 1954, 277 pp., $3.50), and in School Health Education by Delbert Oberteuffer (rev. ed., New York, Harper, 1954, 454 pp., $4.50). Teaching Better Nutrition, A Study of Approaches and Techniques (FAO Nutritional Studies, No. 6, Washington, D. C., Food and Agriculture Organization of the United Nations, 1950, 148 pp., $1.50) should be available for reading and ready reference in all health agencies. Other important source material and approaches are available in Food for Life by Ralph W. Gerard (Chicago, University of Chicago Press, 1952, 304 pp., $4.75), How to Write for Homemakers by Louvica F. Richardson and Genevieve A. Callahan (Ames, Iowa, Iowa State College Press, 1949, 206 pp., $3), and Community Health Educator's Compendium of Knowledge by Clair E. Turner (St. Louis, Mosby, 1951, 266 pp., $3).

Nutrition in Preventive Medical and Nursing Services

The positive approach to health through proper diet requires the utilization of all available media and opportunities for nutrition education. Favorable opportunities for such service reside in the activities, conferences, and clinics which are a part of nursing and medical programs of health agencies. Personnel participating in these programs have a further responsibility, however. This is to be alert to recognition of manifestations and physical signs of malnutrition so that diet may be modified and treatment begun early. Malnutrition includes not only the manifestations of deficient intake of energy sources or specific nutrients, but also the physical defects which result from, or are associated with, excessive food consumption producing obesity. Detailed discussion of the effects of caloric undernutrition may be found in the two-volume work of Ancel Keys, Josef Brozek, Austin Henschel, Olaf Mickelsen, and Henry L. Taylor, The Biology of Human Starvation (Minneapolis, University of Minnesota Press, 1950, 1385 pp., $24). Joseph Gillman and Theodore Gillman have written a book entitled Perspectives in Human Malnutrition (New York, Grune and Stratton, 1951, 584 pp., $18), which contains much valuable material. The physical and functional abnormalities associated with deficiencies of specific nutrients are discussed in Clinical Nutrition, edited by Norman Jolliffe, F. F. Tisdall, and Paul R. Cannon (loc. cit.). This book also contains many illustrations and color prints of typical lesions. Other books listed in the section of this paper concerned with "General Background" contain useful descriptions of the diseases of undernutrition. The structural and morphologic changes associated with deficiency disease are described in The Pathology of Nutritional Disease, a book by Richard H. Follis, Jr. (Springfield, Ill., Thomas, 1948, 310 pp., $6.75). A map prepared and published by the American Geographical Society graphically presents the world distribution of deficiency disease. It is entitled Study in Human Starvation Diets and Deficiency Diseases (New York, American Geographical Society, 1953, $1.25).

Although nutritional deficiency diseases are not of great prevalence in the United States, their occurrence is not infrequent. Among the more common of these disorders is endemic goiter. An excellent review of this problem may be found in "Endemic Goiter: A Problem in Preventive Medicine" by David Marine (Ann. Int. Med. 41: 875–886, 1954). Another is dental caries. The

very significant role that provision of fluoride in water supplies may have in reducing the caries incidence in children makes of this a highly desirable and very important health measure. A review of the caries problem and of the role of fluoride deficiency in inducing the defect may be found in A Survey of the Literature of Dental Caries by Guttorm Toverud, Sidney B. Finn, Gerald J. Cox, Charles F. Bodecker, and James H. Shaw (Publication 225, National Research Council, Washington, D. C., 1952, 567 pp., $3). It is important that every health agency should have ready access to evaluations and discussions of procedures of fluoridation. Two valuable references in this field are The Problem of Providing Optimum Fluoride Intake for Prevention of Dental Caries (Washington, D. C., National Academy of Sciences—National Research Council, Publication 294, 1953, 15 pp., 50 cents) and Fluoridation as a Public Health Measure edited by James H. Shaw (Washington, D. C., American Association for the Advancement of Science, 1954, 232 pp., $4.50)

Obesity is undoubtedly the most common of the manifestations of poor nutrition. Life insurance statistics attest to its significance as a life-shortening disorder. Basic consideration of a variety of factors in obesity is contained in Overeating, Overweight and Obesity (Nutrition Symposium Series, No. 6, New York, National Vitamin Foundation, 1953, 151 pp., $1.50). The subject is dealt with in an interesting and practical way in the book, Obesity, by Edward H. Rynearson and Clifford F. Gastineau (Springfield, Ill., Thomas, 1949, 134 pp., $3.50).

A number of books and guides are available to assist in provision of diets for a variety of purposes. Particularly useful for physicians are McLester and Darby, Nutrition and Diet in Health and Disease, referred to previously, and Dietotherapy, Clinical Application of Modern Nutrition by Michael G. Wohl (Philadelphia, Saunders, 1945). Another important guide is Therapeutic Nutrition by Herbert Pollack and Seymour L. Halpern (Washington, D. C., National Academy of Sciences—National Research Council, Publication 234, 1952, 94 pp., $1). The frequent use of low salt diets as an adjunct to treatment of various disorders calls for an authoritative source of information. Important in this field are Sodium Restricted Diets—The Rationale, Complications and Practical Aspects of Their Use (Washington, D. C., National Academy of Sciences—National Research Council, Publication 325, 1954, 71 pp., $1) and Planning Low Sodium Meals (New York, Nutrition Foundation, 1954).

Other books deal with the details of selecting food and planning diets. One of these is written by Marion D. Sweetman and Ingeborg MacKellar, Food Selection and Preparation (4th ed., New York, Wiley, 1954, 645 pp., $6.50). An important book of the past in this field has been Feeding the Family by Mary S. Rose (4th ed., New York, Macmillan, 1940). The publication of the Department of Agriculture, Helping Families Plan Food Budgets (Misc. publication 662, Washington, D. C., U. S. Department of Agriculture, 1950), has proved especially useful for individuals who are attempting to plan to meet nutritional needs of persons in low income groups.

Food Technology

Food production with its many ramifications makes up the largest single industry in this country. In spite of this, scientific and technological advances have been slow as compared with others. Since the war, however, there has been a great increase in food research and the use of food technologists in the industry. The publication of books in the general area of food technology has gained momentum and, as time goes on,

more and better ones should appear. The great difficulty in preparing a "bookshelf" relating to food technology is in deciding how broad an area should be covered. The interests and judgment of the authors are, of course, reflected in the books and articles that are included.

An excellent, although incomplete, guide to the literature on food research and technology was prepared by M. Peterson (Activities Report, Research and Development Associates, Food and Container Institute, Inc. 6: 16–26, 1954). Information concerning the type and location of food research in the United States is in the Survey of Food and Nutrition Research in the U.S.A., 1952–1953 (Washington, D. C., National Academy of Sciences—National Research Council, published by the U. S. Department of Agriculture, 1954). The series entitled Advances in Food Research (edited by Emil M. Mrak and George F. Stewart, New York, Academic Press, Vol. I, 1948, 459 pp., $8.50; II, 1949, $9.50; III, 1951, $9.50; IV, 1953, 457 pp., $9; and V, 1954, 538 pp., $11.50) has brought together much information. The subjects covered have a wide range, including such areas as the influence of climate on nutritive values of vegetables, consumer surveys, difference of testing chemical and microbial deterioration, commodity problems, and engineering. The three volumes by Morris B. Jacobs entitled The Chemistry and Technology of Food and Food Products (2nd ed., Vols. I, II, III, New York, Interscience, Vol. I, $12, Vols. II and III, $15) contain information concerning all types of food processing, but are particularly useful for source material relating to such items as spices, coffee, and tea.

Food Acceptance—A number of symposia have been sponsored by the Food and Container Institute of the Armed Forces and the proceedings published by the National Research Council. One of these, Food Acceptance Testing and Methodology, is an excellent review of this field (available from the Quartermaster Food and Container Institute for the Armed Forces, Chicago, 1954). Of equal importance is the report published by E. H. Dawson and B. L. Harris entitled Sensory Methods for Measuring Differences in Food Quality (Washington, D. C., U. S. Department of Agriculture, Agriculture Information Bulletin 34, 1951). Other books in this area are Flavor by E. C. Crocker (New York, McGraw-Hill, 1945) and The Origin of Food Habits by H. D. Renner (London, Faber and Faber, 1944). For those interested in odors as a factor determining consumer reaction to foods, reference is made to Odors and the Sense of Smell, A Bibliography by G. Paschal (Airkem, 241 E. 44th St., New York, 1950, $15) and Basic Odor Research Correlation by A. R. Behnke, et al. (Annals of the New York Academy of Sciences 58: Article 2, 1954, 175 pp., $3.50). The importance of color to the acceptance of food is dealt with in Color in Foods (National Academy of Sciences—National Research Council, available from the Quartermaster Food and Container Institute for the Armed Forces, Chicago, 1954).

Food Stability and Preservation—Practically all foods are perishable and tend to deteriorate almost immediately upon leaving the processing plant. Preservation depends, to a large extent, on the methods of processing and in subsequent handling and storage. The relative stability of two important items of diet is discussed in Quality and Stability of Canned Meats and Stability of Dehydrated Eggs (National Academy of Sciences—National Research Council, available from the Quartermaster Food and Container Institute of the Armed Forces, Chicago, 1954). The published proceedings of a Symposium on Storage and Handling of Semi-Perishable Subsistence Items contains much of value (Proceedings, Seventh Annual Meeting, Research and Development Associates, Food and

Container Institute Inc., Chicago, 1954, pp. 82–141). One of the most important types of deterioration is that referred to as the "browning reaction." This is dealt with in Contributions of Browning Research to Ration Item Stability (available from the Quartermaster Food and Container Institute for the Armed Forces, Chicago, 1952). Three recent books are concerned with microbial deterioration of foods. These are Microbiology of Meats by Lloyd B. Jensen (3rd ed., Champaign, Ill., Garrard Press, 1954, 422 pp., $6), Canned Foods, An Introduction to Their Microbiology (3rd ed., London, J. and A. Churchill, 1949, 278 pp., 15 s), and The Bacteriology of Commercial Poultry Processing by M. F. Gunderson, H. W. McFadden and T. S. Kyle (Minneapolis, Burgess Publishing, 1954, $3).

Food Safety—Prevention of foodborne infection is a constant concern of the health officer. Two books are available as valuable reference sources in this area. Gail M. Dack has written a book entitled Food Poisoning (rev. ed., Chicago, University of Chicago Press, 1949, 184 pp., $3.75) and Fred W. Tanner has published Food-Borne Infections and Intoxications (2nd ed., Champaign, Ill., Garrard Press, 1953, 769 pp., $12). There has been great lay and professional interest in recent years in the potential hazards of agricultural chemicals and chemical additives in food. The Food and Nutrition Board of the National Research Council and its Committee on Food Protection have dealt at length with this problem. A number of publications have resulted and have done much to orient the approach in this field. Among these are Use of Chemical Additives in Foods, Principles and Procedures for Evaluating the Safety of Intentional Additives in Foods, Annotated Bibliography of Analytical Methods for Pesticides, The Safety of Mono- and Diglycerides for Use as Intentional Additives in Foods, and The Safety of Polyoxyethylene Stearates for Use as Intentional Additives in Foods (all of these are publications of the National Academy of Sciences—National Research Council, Washington, D. C.).

Food Processing—There is much of significance to health in the procedures utilized in food processing. Space limitations permit inclusion of but a few of the important publications in this area. Two books deal with the process of canning. These are The Canned Food Reference Manual (3rd ed., available from American Can Company, 230 Park Ave., New York, 1947, 638 pp., $7) and Sterilization of Canned Foods (available from American Can Company, Maywood, Ill., 1950). Information relative to drying as a procedure for preservation may be found in Drying and Dehydration of Foods by H. W. Van Loesecke (New York, Reinhold, 1943), Vegetable and Fruit Dehydration, A Manual for Plant Operators (misc. publication No. 540, Washington, D. C., U. S. Department of Agriculture, 1949), and Freeze Drying by Sublimation by Earl W. Flosdorf (New York, Reinhold, 1949, 280 pp., $7). The recent marked increase in production and consumption of frozen foods makes the freezing process one of relatively great importance. Donald K. Tressler and C. Evers have written The Freezing Preservation of Foods (2nd ed., New York, Avi Publishing, 1946, 932 pp., $12), a valuable source of information. In addition, the bulletin prepared by M. A. Joslyn and L. A. Hohl, The Commercial Freezing of Fruit Products (California Agricultural Experiment Station, Bulletin No. 703, 1948) is an important reference. The literature contains much that pertains to the processing of individual types and varieties of commodities; a listing of these cannot be included, but will be found in the more general references given above.

Food Sanitation—In terms of health, great significance attaches to sanitation

in the food industries. There are a number of good treatises on this subject. Of particular value are those by Edward S. Hopkins and F. B. Elder, The Practice of Sanitation (edited by E. S. Hopkins and W. H. Schulze, Baltimore, Williams and Wilkins, 1954, 466 pp., $8), Earle B. Phelps and others, "The Food Contact" (in Public Health Engineering, Vol. II, Part 3, New York, Wiley, 1950) and M. E. Parker, Food Plant Sanitation (New York, McGraw-Hill, 1948). Another very useful and authoritative book has been prepared under the auspices of the Association of Food Industry Sanitarians. It is entitled Sanitation for the Food Preservation Industries (New York, McGraw-Hill, 1952, 284 pp., $5).

Conclusion

The authors have attempted to select from a large number of books and articles on foods and nutrition those of particular importance for professional workers in the health sciences. Many have been omitted that deserve mention, but to include all meritorious writings in this field is manifestly impossible in the short space of this review. The authors regret particularly that space did not allow a listing of some of the items in the literature which, historically, represent milestones in the phenomenal development of the science of nutrition. It should be noted that the application of nutritional knowledge to protect and assure the health of man has hardly kept pace with advances in the science of nutrition. If this review assists in but a small way to point out the many opportunities for health planning which reside in a knowledge of nutrition, its purposes will then have been accomplished.

A New Formula for Estimating the Number of Nurses Needed

California's Health of February 15, 1955, gives a detailed formula by which the Alameda County Health Department determined how many nurses were needed to carry on its generalized public health program, including school health services. The department could not accept the estimates of several authorities who recommended one public health nurse per 3,500 population for such a program. On this basis, the county department would need 64 nurses. A new formula was developed on the basis of a time study of nursing jobs, personnel records, an annual count of school children served, the number of families being followed by health department nurses, and the number of clinics held. On this basis it was estimated that about 40 nurses were needed.

The detailed formula is presented step by step, as well as illustrations of its use in determining how many additional nurses would be needed for contemplated additions to service.

The formula was prepared jointly by the health officer, the director of nursing, and the analyst of the Alameda County Health Department. California's Health, February 15, 1955, California State Department of Public Health, 760 Market St., San Francisco 2.

Serologic Epidemiology of Poliomyelitis

JOSEPH L. MELNICK, Ph.D., JOHN R. PAUL, M.D., F.A.P.H.A., and MARY WALTON, M.D.

Tests revealing the presence, or absence, of both long-lasting and short-lived antibodies to polio viruses allow the laboratory to contribute mightily to epidemiologic studies of the disease. When vaccines are widely available these tests will help to guide health officials in their administration of broad prophylactic campaigns.

Almost a century ago August Hirsch [1] wrote his treatise on the science of historical and geographic pathology. He defined this science, which we now call epidemiology, as one which "will give, firstly, a picture of diseases of mankind, in distinct epochs of time and at various points of the earth's surface; and secondly, will render an account of the relations of these diseases to the external conditions surrounding the individual and determining his manner of life."

Epidemiology as defined above is approached with benefit by serologic methods. This approach is not new, but it can hardly be said to be the common practice of public health laboratories in this country. Serologic epidemiology is especially important in areas where reporting is deficient or otherwise inaccurate, or where large and varying numbers of inapparent infections occur for each one at the clinical level.

The experience of a person with an infection is stamped on his blood and by appropriate antibody tests this experience can often be revealed. As is well known, serum antibodies develop specifically as a part of the body's reaction to infection, whether caused by bacteria, rickettsiae, or viruses. Surveys of antibodies in sera collected from representative persons within an area can tell us which infections have been prevalent in the community, when they last occurred, and which segments of the population were affected most. It recalls the skin test surveys done with the tuberculin and Schick tests. By comparing sera from different areas we can learn objectively of the distribution and prevalence of infections in different parts of the globe. Studies of this nature have been carried out for yellow fever and more recently for influenza. The present discussion will be concerned with the description of studies that have been carried out during the last five years on the serologic epidemiology of poliomyelitis. In addition to our laboratory, those of Turner, Hammon, Sabin, Gear, Lépine, Rhodes, and others have been active in this field.

Before data collected in serologic surveys can be subjected to a satisfactory epidemiologic interpretation, certain general principles concerning the antibody response after acute infection must be established. Often the results of serologic surveys, when examined in conjunction with the history of a disease in the areas studied, assist in the formulation of such general principles. From a large number of studies carried out over the years, the following principles have been established for poliomyelitis:

Drs. Melnick and Paul are associated with the Section of Preventive Medicine, Yale University School of Medicine, New Haven, Conn., and Dr. Walton is with the Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, Atlanta, Ga.

This work was aided by a grant from the National Foundation for Infantile Paralysis, Inc.

This paper was presented before a Joint Session of the Epidemiology and Laboratory Sections of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 12, 1954.

1. Antibodies against the virus appear in response to infection, regardless of whether the infection is accompanied by serious illness or, as in most cases, is inapparent.

2. Two kinds of antibodies are known: neutralizing and complement-fixing. The former are long-lasting, perhaps for life, whereas the latter are short-lived, and within a year or so after infection may disappear or be present at low levels. Possession of neutralizing antibodies is believed to be associated with a state of immunity against the disease.

3. Antibodies are transmitted from mother to offspring. They soon fall in titer, and if infection does not occur, are usually no longer detectable six months after birth. Subsequent acquisition of antibodies is the result of an infection, clinical or silent.

4. Three types of poliomyelitis virus exist and infection with one type produces durable neutralizing antibodies against that type alone.

5. Complement-fixing antibodies vary in their type specificity from one person to the next. They tend to be more specific in young children especially at the time of first exposure to poliomyelitis virus. This suggests that the broad reactions in older individuals may be due in part to an anamnestic or recall phenomenon. The conduct of the test also influences the type specificity obtained with a particular serum: large amounts of antigen usually give heterotypic reactions whereas minimal amounts react more often with the antibody against the virus causing the infection.

6. No clear evidence is available which indicates that the possession of neutralizing antibodies against one or two types of virus protects against infection with the remaining type or types, although there have been hints in this direction.

7. The time of acquisition of poliomyelitis antibodies in a community determines the course of the clinical disease in the area. In areas of poor sanitation, exposure to virus is frequent and infection in infancy is the rule. In such areas the disease is still rightly called infantile paralysis, for cases rarely occur in older children or adults. In areas such as the northeastern United States and Scandinavia, infection with the resultant development of antibodies is postponed, and in such areas we find the age of incidence of the paralytic disease is continually increasing.

One question, still unanswered, is whether the adult immunity in regions where poliomyelitis regularly occurs is due to a single infection or to multiple reinfections over the years. Perhaps both mechanisms operate, but it is the dose and virulence of the virus which determine the level and persistence of antibody. We shall now turn to three surveys to see what they have taught us.

First, consider the situation in isolated Eskimo populations which are rarely attacked by poliomyelitis, but when infection is occasionally introduced the results may be disastrous. For example, in the most recent report of an epidemic in a small Eskimo settlement in Canada,[2] the paralytic attack rate was 28 per cent and the death rate for the population was 8 per cent. In order to determine the degree of immunologic maturation of such isolated groups, sera were collected in 1949 from normal Eskimos living in another Arctic area, Barrow Village on the north coast of Alaska. The data, previously reported,[3] are charted in Figure 1 which shows the levels of neutralizing antibodies found in different age groups. Antibodies to the Type 2 Lansing strain were found in high titer in persons 20 years and over, but were absent in those under this age. This means that Type 2 virus had been

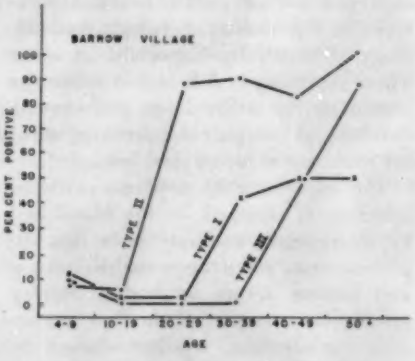


Figure 1—Age Distribution of Neutralizing Antibodies Against the Three Types of Poliomyelitis Virus for Eskimos Living on the North Coast of Alaska in 1949[3]

absent for 20 years and that the antibodies must have been acquired in 1930 or earlier, and they had persisted for 20 years in the absence of reinfection. The age distribution of antibodies against the other poliomyelitis types suggest that exposure to Type 1 virus occurred about 1915 and to Type 3 virus about 1905. As no evidence is available that exposure to these two types had occurred since then, it follows that antibodies against Types 1 and 3 viruses can persist for 30–40 years in the absence of reinfection. This is an example of Hirsch's historical and geographic pathology.

In contrast to the remote, isolated Eskimo populations of northern Alaska, that of the urban population of subtropical, crowded Cairo, Egypt, has yielded evidence of widespread infection with poliomyelitis viruses. Although clinical poliomyelitis is most unusual in native adults and the over-all attack rate is low in that country, the endemic paralytic attack rate for this disease in native infants is appreciable. A serologic survey, previously reported in detail,[4, 5] carried out on normal sera collected in Egypt in 1950 revealed that neutralizing antibodies to all three types of poliomyelitis virus are also acquired at an early age in this area. Children were born with neutralizing antibodies which fell off in about six months. After this they immediately began to rise so that more than 50 per cent of the infants had antibodies for Type 2 before they were two years old, and for all three types, 75 per cent or more had antibodies before they were four years old.

Complement-fixing (C-F) antibodies, which are relatively short-lived, were also measured in this population, and the findings of Type 2 C-F antibodies are charted in Figure 2, together with those of neutralizing antibodies to this type. In contrast to neutralizing antibodies, C-F antibodies were completely absent in those below the age of one year. This paralleled their scarcity in the higher ages, from 10 years on, and could be explained by the fact that mothers were devoid of these antibodies and therefore could not transfer them to their offspring. The rise of C-F antibodies started steeply at the age of one year and was confined to childhood. The curve at a serum dilution of 1:4 showed a plateau at the level of 50 per cent through the ages from five to nine years. After that age there was a steep fall in the antibody level, nearly to zero, with the older group practically devoid of C-F antibodies. The curve at a serum dilution of 1:16 emphasizes that C-F antibodies in Cairo are associated with the first few years of life by showing that, after the age of four years, the percentage of reactors dropped almost to zero. In contrast, neutralizing antibodies, which were also acquired early in childhood, were retained at high levels throughout life.*

The Cairo observations bear on the problem of whether single or multiple exposures are necessary for the maintenance of immunity to poliomyelitis, as expressed by the presence of neutralizing antibodies. If we assume that reinfection after some years would be evidenced by a reappearance of C-F antibodies, then the Cairo data indicate such reinfection in adult life does not take place. The reason for this may be in the widespread exposure to poliomyelitis virus in Cairo.[6, 7] Thus, early in life the contacts with the virus may be of such frequency and intensity that the resultant immunity is sufficiently solid that older children and adults are no longer able to support even an inapparent infection.

However, one cannot generalize from

* Reporting of poliomyelitis in Casablanca, French Morocco, is like that in Cairo. A study of sera collected by Paul and Horstmann in 1953, for neutralizing and complement-fixing antibodies against all three viral types, has yielded data to support the conclusions reached from the Cairo study.

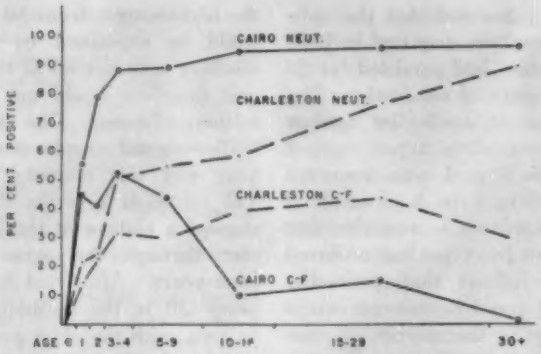


Figure 2—Neutralizing and Complement-Fixing Antibodies Against Type 2 Virus in Cairo [4, 5] and in Charleston, W. Va.[6]

the Cairo results. A similar survey of poliomyelitis antibodies was carried out in Charleston, W. Va.[6] The over-all results are compared in Figure 2 with those obtained in Cairo. As might be expected from the older age groups that are attacked by clinical poliomyelitis generally throughout this country, the development of neutralizing antibodies in Charleston is correspondingly delayed and does not reach over 80 per cent until the age of 30. The complement-fixation responses also support the view that immunologic maturity has been postponed. In contrast to Cairo where infections are all concentrated in early childhood, the C-F antibody curve indicates that recent infections in Charleston, whether new infections or reinfections with homo- or heterotypic strains, are spread over a 30-year period.

Not only is serologic epidemiology a useful method to compare the immune status of populations in different countries, but it can also elucidate the role that local environmental conditions may play in the acquisition of immunity. For the remainder of this paper we shall

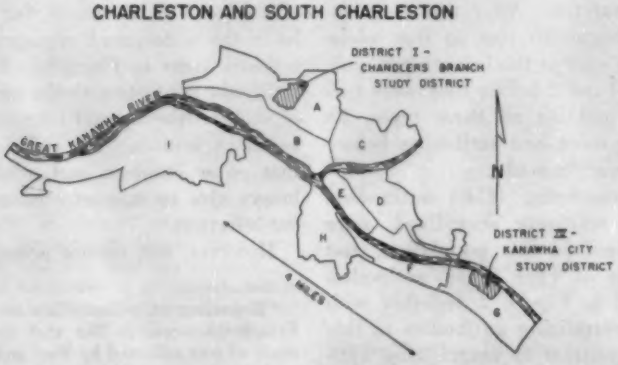


Figure 3—Map of Charleston and South Charleston Showing the Two Study Areas. District I, Low Socioeconomic Group, Poor Sanitary Environment. District IV, Middle to Upper Middle Socioeconomic Group, Good Sanitary Environment

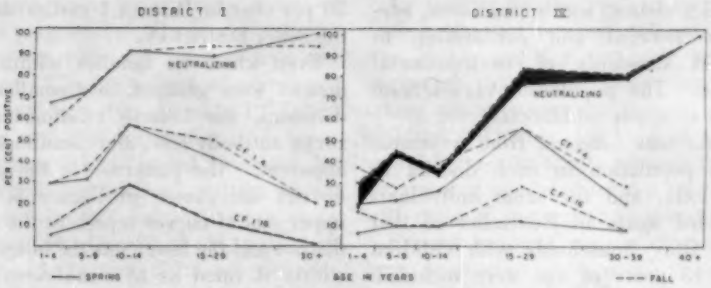


Figure 4—Prevalence of Type 2 Poliomyelitis Antibodies in Paired Sera Collected in the Spring and Fall of 1951 in the Two Study Districts of Charleston

analyze more closely the results obtained in Charleston.

Two areas from the city, shown in Figure 3, were selected for study on the basis of obvious differences in the sanitary environment and socioeconomic status of the populations. The people in District I were a native white group of low economic status living in a physical environment that was grossly substandard. Human excrement was deposited in insanitary privies and in flush toilets with surface-drained septic tanks. There were no garbage collections and the area was littered with organic wastes and assorted rubbish. District IV, a

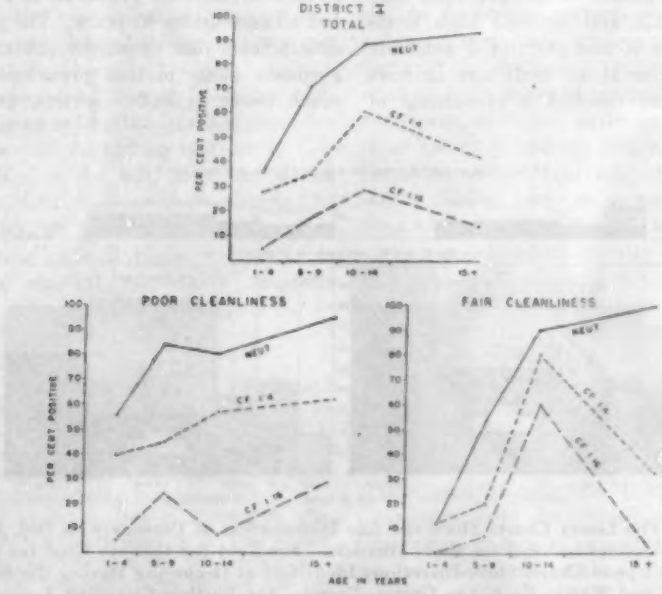


Figure 5—District I: Prevalence of Antibodies in the Fall of 1951 in the Total District (Upper Chart) and in Households Rated as Clean (Lower Right) or Not Clean (Lower Left)

few miles distant, was a clean area, adequately sewered and conforming to accepted standards of environmental hygiene. The population varied from middle to upper middle-class.

Serum was collected from a sample of the population in each district in May, 1951, and the same individuals were bled again in November of that year. Only households with children under 15 years of age were included. The data obtained are best appreciated by reference to the following charts. The curves in Figure 4 show that the age-specific prevalence of neutralizing antibody in the two districts followed patterns previously reported. In the lower socioeconomic group (District I) living in an insanitary environment there was a rapid increase in the earlier years of life—after which the high level of antibodies appeared to be maintained —while the antibody prevalence in the middle to upper middle-class group (District IV) rose more slowly, to attain a prevalence of 50 per cent only after age 15, and reached high levels only at ages 40 and over. C-F antibody began to rise at an early age in both districts, but reached a prevalence of 50 per cent in District I earlier than in the better District IV.

Even when the families within each district were grouped into smaller subdivisions, the inverse relationship between antibody level and cleanliness was apparent. The patterns for the poorer district are shown in Figure 5. The upper sets of curves represent the entire district and the lower sets the households within it rated as to cleanliness. The cleaner families in the district had made a conscious effort to compensate for poor sanitary environment by improving their personal hygiene practices and this was accompanied by a delay in antibody development.

Figure 6 is a schematic representation of the information from the combined tests. As has been noted, the type-specificity of individual C-F reactions is unclear, but a general pattern of old, recent, and new infections can be observed. "Old" infections, i.e., persons having neutralizing but not C-F antibodies—were more prevalent in District I at all ages under 40 years. The picture differs from that shown by neutralizing antibody alone in that prevalence was much lower in both districts, and the

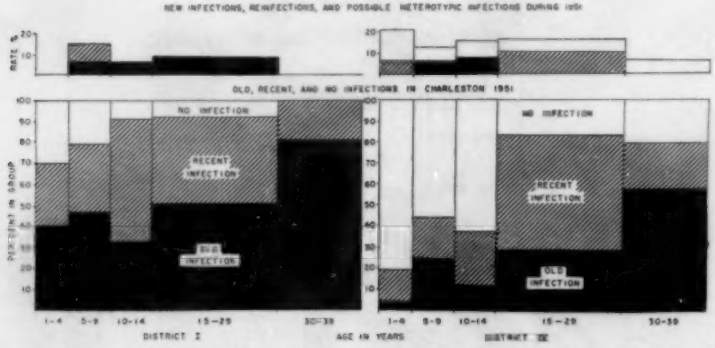


Figure 6—The Lower Charts Show the Age Distribution of Persons with Old, Recent, or No Infections in the Two Study Districts. See Text for Criteria Used for Grouping. The Upper Charts Show Infections Identified as Occurring During the Summer of 1951, and Within Each Age Group, Persons Are Further Classified According to Whether They Arose from the Groups Showing Old, Recent, or No Infection in the Spring of 1951.

differences between districts were of greater magnitude. There was little or no increase with age between five and 20 years. The age pattern of prevalence of "recent" infections, prior to 1951, i.e., persons with C-F antobodies, adds more information which is not provided by the neutralizing antibody pattern alone. Infections in this category were more numerous in District I at ages one through 14, but no difference between districts was noted at ages 15–39. "Recent" infections rose early in District I and not sharply in District IV until after the age of 15.

No new infections, i.e., persons without neutralizing or C-F antibodies in the spring who developed them by the fall, were evident in 1951 in District I among those persons with no evidence of previous infection, while significant numbers occurred in District IV as follows: 6/26 (23 per cent) at ages one to four years; 4/35 (11 per cent) at ages five to nine; 3/24 (12 per cent) at ages 10–14; and 2/6 at ages 15–39 years. Five of the new infections at ages one to 14 were indicated by the development of C-F antibodies only.*

"Reinfections," namely, persons with neutralizing antibodies in the spring who developed or showed an increase in C-F antibodies in the fall, were similar in the two districts. As there appears to have been an absence of "new" infections with Type 2 virus in District I, this suggests that "reinfection" is probably at least partially heterotypic infection.†

In District IV the peak of recent infection was not reached until after the age of 12, and C-F antibody patterns suggested that reinfections were still taking place among the parents of the children. Whether this kind of pattern would be seen in adults between 20 and 40 years of age who are not in contact with children remains to be investigated.

Present concepts suggest that in any large population group which is not isolated all types of poliomyelitis virus are present, and over a period of a few years they should produce infections and antibodies in a similar fashion; therefore, the patterns observed for any one type should indicate the level of immunity to all. Actually, it has been observed that in many areas of the globe the age distribution of clinical cases due to all types is in proportion to the age distribution of Type 2 neutralizing antibodies, indicating that in the community paralytic poliomyelitis is acquired at about the same rate as subclinical Type 2 infections.[9] In Charleston, in the lowest socioeconomic group living under the environment most deficient in sanitation, rapid development of high levels of neutralizing antibody was observed early in life with some recent infections and reinfections occurring at later intervals. One might expect clinical cases to appear early in life and possibly again in decreased proportion and lessened severity at periods of recent and reinfections. The more severe clinical manifestations should be rare except early in life. In the smaller and cleaner families in the insanitary areas and in families in the better hygienic environment, neutralizing antibody rises more slowly. Cases might be expected to occur over a longer period of life, and actually the 1952 cases in Charleston were distributed in the two population groups as expected from the age prevalence of antibody in the fall of 1951. The concept of gradually acquired immunity, which is maintained

* One of these, age 12, was in a household in which two siblings of ages two and 16 years developed both neutralizing and C-F antibodies, and one sibling, age 13, with neutralizing antibodies in the spring, developed C-F antibodies during the summer.

† Three of six children in District IV who developed C-F antibodies, with neutralizing antibodies demonstrated in the spring and fall, were in households with siblings who developed both neutralizing and C-F antibodies during the summer of 1951.

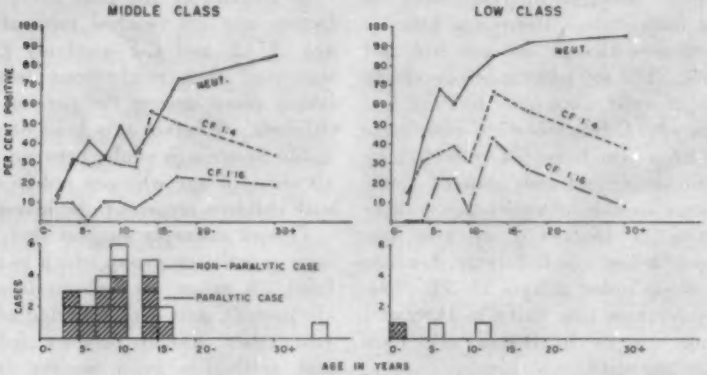


Figure 7—Prevalence of Type 2 Antibodies in Children in Low and Middle-Class Households in the Fall of 1951 and the Age Distribution of Poliomyelitis Cases in Those Socioeconomic Groups the Following Summer

by repeated stimuli, might well account for the patterns that have been observed in this city.

During the summer of 1951 there was very little recognized clinical poliomyelitis in the city. Although changes in antibody prevalence indicated that a significant number of infections were occurring, only four cases were reported, two paralytic and two nonparalytic. In 1952, however, 27 cases were clinically diagnosed in a metropolitan population district of 125,000. It is not possible to say that the groups classified in the study areas are a sample truly representative of the socioeconomic classes in the entire city. However, the classification of households in which cases occurred was carried out in the manner in which families in the two study areas were rated. A point in favor of this comparison is that the age distribution of children was similar for each group.

A distribution of recognized cases of poliomyelitis according to socioeconomic grouping as related to the antibody patterns observed in the families with similar classifications in the study districts is shown in Figure 7. Only three of the cases reported were from families classified as of low socioeconomic status. Their ages were five months, five and 12 years. The infant had severe paralysis, whereas the other cases were nonparalytic. The remainder of cases, 17 paralytic and seven nonparalytic, came from middle-class families. Paralytic cases appeared to be distributed more or less uniformly from three to 14 years of age. It is evident that children in the poorer districts were not providing clinical cases at the same rate as those of middle-class status at ages beyond infancy.*

This paper has attempted to show what may be learned from studies in serologic epidemiology. By investigating on a continuing basis the level of

* This study, like earlier ones from Hammon's laboratory [10] and from our own,[11] has shown the strong effect of household aggregation of children in the prevalence of neutralizing antibody at all socioeconomic and environmental hygiene levels. The picture indicates that polio virus spreads much more rapidly within families than from family to family. The intrafamilial spread of virus appears to be particularly important in those living under more sanitary environments. These points are discussed more fully elsewhere.[8]

immunologic maturation of certain communities, or of defined segments within a single community, we learn about a disease's endemiology, i.e., as the infection exists year in and year out within the people. With the extension of such studies public health laboratories might be expected to act as weather forecasters and warn of a community's vulnerability to impending epidemic hurricanes. One can foresee a practical application of this knowledge when vaccines against poliomyelitis as well as other virus diseases become generally available. Thus, the public health laboratory might furnish the information indicating when and where vaccination programs should be carried out.

REFERENCES

1. Hirsch, A. Handbook of Geographical and Historical Pathology. London edition by the New Sydenham Society, 1883–1886.
2. Johnsen, H. V., and Wood, W. J. An Outbreak of Poliomyelitis at Maguse River, N. W. T. Canad. J. Pub. Health 45:16–17, 1954.
3. Paul, J. R.; Riordan, J. T.; and Melnick, J. L. Antibodies to Three Different Antigenic Types of Poliomyelitis Virus in Sera from North Alaskan Eskimos. Am. J. Hyg. 54:275–285, 1951.
4. Paul, J. R.; Melnick, J. L.; Barnett, V. H.; and Goldblum, N. A Survey of Neutralizing Antibodies to Poliomyelitis Virus in Cairo, Egypt. Am. J. Hyg. 55:402–413, 1952.
5. Goldblum, N., and Melnick, J. L. Complement-Fixing Antibodies to Type 2 (Lansing) Poliomyelitis Virus in a Normal Population of a Subtropical Area. J. Exper. Med. 96:175–185, 1952.
6. Ward, R. Poliomyelitis and Coxsackie Viruses from Egyptian Flies. Federation Proc. 11:496, 1952.
7. Melnick, J. L., and Ågren, K. Poliomyelitis and Coxsackie Viruses Isolated from Normal Infants in Egypt. Proc. Soc. Exper. Biol. & Med. 81:621–624, 1952.
8. Walton, M., and Melnick, J. L. Poliomyelitis Antibodies in Two Differing Socioeconomic Groups Within the Same City, Yale J. Biol. & Med. (In press.)
9. Paul, J. R.; Melnick, J. L.; and Riordan, J. T. Comparative Neutralizing Antibody Patterns to Lansing (Type 2) Poliomyelitis Virus in Different Populations. Am. J. Hyg. 56: 232–251, 1952.
10. Hammon, W. McD.; Sather, G. E.; and Hollinger, N. Preliminary Report of Epidemiological Studies on Poliomyelitis and Streptococcal Infections. Lansing Neutralizing Antibody and Antistreptolysis "O" Surveys of California Cities, Texas, North Carolina, Mexico, Pacific Islands, and Japan. A.J.P.H. 40: 293–306, 1950.
11. Melnick, J. L., and Ledinko, N. Social Serology: Antibody Levels in a Normal Young Population During an Epidemic of Poliomyelitis. Am. J. Hyg. 54:354–382, 1951.

Overhauling School Health Services

A Pennsylvania Joint State Government Commission, after extensive study of school medical examinations in the state, has recommended an integrated school health program under the administrative supervision of the state health officer. At present, the school health program is administered by local school districts and the State Departments of Health, Public Instruction, and Public Assistance. The cost to the state alone is more than $5,500,000 annually. The commission's report indicates too great an emphasis on a regularly scheduled medical examination and not enough on either an economic health inventory nor on follow-up to correct defects found.

Among the outstanding recommendations made are the following:

1. A complete, regularly scheduled health appraisal of each child three times during his school life, and with provision for interim tests if indicated.

2. Pre-employment examination and biennial chest x-rays for school personnel.

3. As to health personnel, all school districts must employ school nurses. Medical examiners should be paid on the basis of time spent and should be relieved of sanitary inspection duties.

4. Continuation of current joint financing of nursing services by the state and the local school districts with other services reimbursed on a per pupil basis.

5. Records providing for clearly defined, unambiguous terms with consistent defect classification. With respect to current records, the report says "among the elements making for inefficiency are an inadequate medical history, obsolete diagnostic techniques, and uneconomic division of labor among physicians, nurses, and technicians."

An Educational Project in Childhood Accident Prevention

RENEE ZINDWER, M.D., M.P.H., F.A.P.H.A

In so far as the prevention of childhood accidents rests with the children's parents and other adults close to them the problem becomes one of creating awareness, adult education and guidance. All this, as everyone knows, is an exceedingly difficult matter. Hence all will find interest in the program of parental education reported upon here.

With the emergence of accidents as a major and serious health hazard, particularly to children, public health workers are confronted with an intricate problem which as yet has not been clarified and defined in all its aspects. The urgency and complexity of the problem create not only a need for further epidemiologic investigation into the extent and degree of morbidity resulting from accidents, as well as concerning factors of host, agent, and environment and their interaction, but they also present a challenge to find means and ways of translating already existing knowledge into preventive action. Perhaps some day our approach to the various types of accidents will be as specific as our control measures are today against communicable diseases, nutritional deficiencies, and dental caries. At the moment, however, we are still in the initial phase of exploration and experimentation.

The New Jersey Safety Project is such an experiment. Primarily it is an experiment in safety education on a large scale, but it also contains an element of fact-finding. Furthermore, it illustrates how a particular health program may be developed and gain strength and force through community organization. The Health Department, because of its strategic position and the technical skills of its personnel, may initiate, guide, and coordinate the project, but it must recognize that other participating groups have an equally important part in the planning and in the execution of the program.

The planning for the New Jersey Child Safety Project was begun jointly by the State Department of Health, the New Jersey Congress of Parents and Teachers, and the New Jersey Safety Council. When we had reached a point at which we could offer a tentative proposal for action, the Medical Society of New Jersey and the New Jersey Chapter of the Academy of Pediatrics were approached and willingly agreed to cosponsor the project and participate actively in it. At a later date we secured the valuable cooperation and assistance of the National Safety Council.

Premise and Objectives—Our premise was this: The "susceptibility" of children to various accidents closely correlates with their developmental stage and, accordingly, accident prevention will depend largely upon a flexible and sensitive balance between protecting the child and educating him to look out for his own safety.[1] In order to achieve this, education of adults, particularly parents, must receive serious attention, not only in terms of individual anticipatory guidance in the physician's office, in the well child conference, and through public health nursing visits, but also through efforts toward creating a sustained and enlightened interest in the community at large, preferably through citizen participation.

We agreed at the starting point that we would concentrate on the accident problem of infants and preschool-age children in the home. We reasoned as follows: Home accidents among young

children present a large and serious enough problem to warrant special attention. Limiting the scope of our project in this manner would allow for a more direct and effective educational approach than if we attempted to deal with the entire spectrum of childhood accidents all at once. Furthermore, we would thus lay a more solid groundwork for an expanded program to be developed eventually.

Within this framework we set our goals. Our first objective became clear immediately: To stimulate—without creating unnecessary fear—as many persons as we could to think about home accidents in young children; to motivate them toward abandoning the fatalistic "accidents just happen" attitude, replacing it with a serious consideration of the problem in a realistic and constructive manner. Our second objective gradually emerged from our discussions: To determine, to a limited extent, judgment and attitudes of adults as these relate to commonly occurring situations in and around the home which contain a potential accident hazard to a small child. The information thus obtained should then serve as a base line for more specific educational efforts later on.

Method—Once the scope of the project and its objectives were determined, we proceeded to consider the method of implementation and, accepting the concept that "learning by doing" is the most effective educational process, we asked ourselves: "How can we employ this idea in mass education and how, at the same time, can we obtain the information we want?" Finally, the following plan was agreed upon, developed in minute detail, and executed according to schedule in the spring of 1954.

Preceded by an intensive campaign in which PTA leaders and membership throughout the state were alerted and carefully prepared for the project, a questionnaire of the multiple choice type was distributed to a 10 per cent sample of the PTA membership throughout the entire state. The sample, amounting to approximately 30,000 people, was determined by checking off every tenth person on each local membership list. The persons so selected were visited by specially appointed members in each local unit and were asked to complete the questionnaire in the presence of these "interviewers." This was done to insure each individual's response without help from others. The questionnaires were channeled from the central office of the New Jersey Congress of Parents and Teachers to the 21 county council presidents and from there, through county contact persons, to all local PTA units, of which there are 1,191 in New Jersey. The completed forms were collected by reverse process and then sent from the central PTA office in bulk to the National Safety Council for statistical processing. The distribution and collection of the questionnaires were preceded and accompanied by directives carefully prepared and minutely detailed, dealing with the project organization, the time schedule of each operational step, and the functions of each participating individual. Particular caution was exercised to keep content of the questionnaire confidential until the release would not jeopardize the validity of the survey. It is estimated that approximately 40,000 persons actively participated in this "Operation Child Safety."

All local boards of health were, of course, kept informed about the project and their cooperation was solicited. We

---

Dr. Zindwer is chief, Bureau of Maternal and Child Health, State Department of Health, Trenton, N. J.

This paper and the discussion by Dr. Lemkau which follows were presented before a Joint Session of the Epidemiology, Maternal and Child Health, and Public Health Nursing Sections of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 14, 1954.

had considerable radio and newspaper publicity prior to the distribution of the questionnaire. The Rutgers University Radio Forum on radio station WAAT in Newark devoted one session to a round-table discussion entitled "How Safe Is Your Child at Home?" in which representatives of the sponsoring agencies discussed the problem in general and the project specifically. This discussion was tape-recorded and rebroadcast over 17 other radio stations throughout New Jersey. In addition, several local radio stations, cooperating with the local PTA chapters, devoted programs to child safety and the project. As far as the newspapers were concerned—their response was equally gratifying. Our clipping service submitted 83 individual newspaper articles on the project appearing in 55 papers; there were nine editorials.

The returns of the questionnaires were excellent. Over the entire state approximately 83 per cent were completed. Six of the 21 counties had a return of more than 90 per cent, two of these returned 98 per cent of the questionnaires.

The Questionnaire—A few words about the questionnaire—it had undergone a number of mutations until, in its final form, it was developed with the expert assistance from the APHA's Professional Examination Service. Theoretically it is designed to involve those who answer it into situations which commonly occur in and around the home and which are potentially hazardous to a small child. Four ways of dealing with the situation are offered for choice, one of these being adequate, the others being plausible but undesirable alternatives, indicating in some instances overprotectiveness, punitiveness, or lack of recognition that a problem exists. In completing the questionnaire, one would have not only to identify with each situation described but also to give a clue as to how one evaluates it. Additional questions were designed to give some background information on the person completing the schedule.

When we proceeded to pretest the questionnaire on several groups of people, such as PTA leaders, public health nurses, businessmen, etc., we were amazed and delighted with the results. We discovered that we had a powerful health education tool at hand. Apparently people become involved emotionally to the extent that they become most eager to pursue and debate further the issues presented. Lively group discussions started easily and spontaneously.

Follow-up of the project so far has consisted of these activities:

Local PTA meetings for the purpose of discussing the questionnaire and child safety have already taken place in many areas.

An article centered around the questionnaire, discussing each individual question, giving the preferred answer, and indicating reasons for the choice was printed in "Parent-Teacher," the monthly publication of the New Jersey Congress of Parents and Teachers.

A weekly "Child Safety Quiz," discussing one of the questions each week for a period of 16 weeks, was offered to the newspapers and is currently being published in 28 representative newspapers throughout the state, thus bringing the educational aspects of the project to a much larger group than the PTA membership.

Tentative plans for additional radio coverage are now being made.

Evaluation—An evaluation questionnaire was sent to the PTA county health, preschool, and safety chairmen. The returns, although incomplete, indicate that the project created increased interest in child safety and that as a result plans are already being made by several groups for safety programs on county and local levels. Interest was expressed in utilizing the questionnaire

quite extensively for group discussions, and requests were made for having the tabulation of answers distributed to all county and local groups as soon as available from the National Safety Council. Additional educational materials, such as pamphlets, films, check lists, bibliographies, and other references were requested.

A more detailed evaluation questionnaire will be distributed to all local PTA chapter presidents to obtain information on how the project was received on local level and what specific plans or suggestions are made for further educational activities.

The statistical processing of the 25,000 returned questionnaires has not yet been completed. We are, of course, aware that we are dealing with a selected and biased population sample. PTA members in New Jersey are not representative of all parents in the state, much less of adults in general. Nevertheless, we believe that the statistical results will give us some interesting information on judgment and attitudes of adults which, heretofore, have not been tested on a large scale but are certainly a very important environmental factor in the epidemiology of home accidents in children. We are planning to use the findings as basis for further educational efforts, primarily to develop some safety education materials geared to the results, and also to interpret and publicize the data to create further interest in the problem and to utilize them as a basis for program planning.

Expenditures—Public health people are necessarily concerned with program expenditures. You may, therefore, be interested to know to what extent the Health Department budget was burdened by this sizable project, the theoretical cost of which at one time was estimated at approximately $50,000. Actually, the department's cash outlay was a little over $300. Other cash payments were carried by the New Jersey Safety Council and the PTA, but the major part of the cost was defrayed by the thousands and thousands of volunteer man hours donated so freely and organized so well. In addition, the National Safety Council assumed the responsibility for the statistical processing of the returned questionnaires—a considerable expenditure, if we had had to pay for it. All the radio time and extensive newspaper publicity were free and so were the safety education materials utilized in the project.

But the most valuable contribution, the essential ingredient for the success of our project, cannot be measured in dollars and cents—and that is the spirit of good will and mutual respect which characterized the relationship of the groups participating in this undertaking, and which, I am willing to predict, will assure continuity and expansion of our "Operation Child Safety."

REFERENCE

1. Dietrich, H. F. Clinical Application of the Theory of Accident Prevention in Childhood. A.J.P.H. 42: 849 (July), 1952.

Safety Education Without Fear

DISCUSSION BY PAUL V. LEMKAU, M.D.

To begin with, I feel I should apologize for appearing here to talk about a subject in which I have extremely little field experience. This feeling of embarrassment is particularly acute inasmuch as I follow Dr. Zindwer who has reported a comprehensive field experience in accident prevention education. In my own defense, I can tell you that I tried to escape the assignment in favor

Dr. Lemkau is professor of public health administration, Johns Hopkins University, School of Hygiene and Public Health, Baltimore, Md.

of other psychiatrists but failed and am now left to do what I can with the subject. One of the reasons this particular psychiatrist was asked may be that I dropped a remark at the National Health Council Forum this spring to the effect that Dr. Langford's study of accident-prone children seemed to indicate that these children were more "likeable" than those who lived safely, and that this seemed peculiarly appropriate in our culture where adventurousness and the "frontier fantasy" are still in our ideals. I also raised a few other questions at that time that seemed to bother people. For example, are the fingers that have been lost in the tremendous expansion of the use of power tools at home worth as much as the increased interest the father may have in his home since these tools became available? And, also, is the assumption that minor accidents happen to the same people who have serious accidents a true one, or are people who have fatal and near-fatal accidents different from those who have repeated minor accidents?

The subject assigned me today is obviously drawn from the title of Dr. Grantly Dick Read's book on childbirth and leads to a comparison of the two fields to which the same concept is to be applied. Although pregnancy may be called an "Act of God" and totally unpredictable for the purposes of breaking a Hollywood contract, it is certainly not quite as unpredictable as an incident described as an accident and, once it is under way, the inevitable series of events can be predicted with reasonable certainty so that "anticipatory guidance" can be done.

The essence of the meaning of accident is that it is unpredictable. On reflection, I think we must agree that if this were actually true no accident prevention of any sort would be possible. What the word "accident" really implies is that there is predictability of a more limited sort than is the case, say, in pregnancy. Many auto crashes are not accidents and I often feel they should not be called accidents at all. They are events which are predictable, but to a limited extent. It is no "accident" when a driver with a high blood alcohol content and going 70 miles an hour kills himself or somebody else. It is a semantic error, it seems to me, to call this eminently predictable event an "accident." When a child pulls a pan of hot water off the stove and it pours over him, it is not really an "accident" strictly; it is an event that varies in predictability according to whether or not the handle of the pot was turned in or out and what there was available for the child to stand on.

Were accidents really accidents we could have no preventive program. It is because they are events that are to some extent predictable that we can do something to prevent them, can analyze the various factors entering into the determination of their predictability, and do something about them. In the Buffalo newspapers just now we can see this clearly, for a group of citizens are arguing that a particular stop light at a school crossing could have been put in before the fatal accident that recently occurred to a child there. The absence of the stop light was a factor in the predictability of that "accident," or more accurately, that predictable event.

This sort of analysis has the effect of reducing anxiety. It becomes possible rationally to study any situation for the factors that affect the predictability of unfortunate predictable events. We are no longer mere clay to be subject to totally unpredictable forces over which we have no control. The psychiatrist distinguishes between anxiety and fear, the former being unrealistic feelings of fear in the absence of adequate cause, fear being the healthy respect for a situation inherently dangerous to the person. The recognition of the predictability of accidents leads to the re-

duction of anxiety through doing something about the manageable factors in the predictability equation. Understanding of these factors may also reduce the healthy fear, since the dangerous situation may then be better controlled, the real danger being reduced.

This leads to a very active controversy in the health education field. When is it justified to use fear as a motive for inducing a population to adopt healthy practices? My own feeling is that the use of fear is justified when medicine has something to offer in the way of prevention. When there is no technic available, when the knowledge on which to base action does not exist, fear seems a weapon that has its dangers for the mental health of the people. For example, it seems to me that a fear of typhoid fever is perfectly logical since typhoid fever can be stamped out. I have had a good deal of reservation—and may still have, depending on how this summer's evaluation of the vaccine turns out—on the question of the wisdom of the use of fear as a motive in polio campaigns. The only thing people can do here is to try to repair damage, not prevent disease. Thus, they are led to make votive offerings to the God of Research that he might save them from an essentially unpredictable happening. That this sacrifice is not sufficient to relieve the public of its anxiety is seen in the explosive panics that take place when a few polio cases appear in a community. The same reasoning may be applied to a disease I might more appropriately discuss, schizophrenia. Here, too, we can offer no rational protection, only treatment and repair of the damage. We ask for offerings to the God of Research, too (and have not been able to get anywhere near the money needed to support the research that should be done), but the offerings are again ineffective in relieving the anxiety which escapes control now and again in the orgies of recrimination that are the recurrent exposés of mental hospitals.

Accident prevention as a field of public health endeavor is fortunate in that the mechanics of accidents can be known. There is something more to do than make a sacrifice to the God of Research. There are cause-and-effect relationships that are very clear and act within a span of time short enough to grasp easily (this may be the problem that reduces our ability to see the causes of schizophrenia). The factors of predictability are to a considerable extent modifiable and offer the opportunity to reduce both fear and anxiety through their modification. Finally, the fact that most people would like to reduce accidents, at least on the conscious level, makes the accident prevention field easier to work in.

A favorable atmosphere for accident prevention is not all to the good, however. People may take it all for granted; it may take a powerful shock to bring it to attention. In a sense, the significance of accidents as a cause of death has "sneaked up" on us gradually as the other causes of death have been reduced. It did not come as a frightful epidemic everyone would notice, but as a gradual rise in proportion that many have not yet fully grasped. The bony skeleton of death in the form of the old-fashioned open electrical outlet or the shiny new automobile or the lovely copper-bottomed stainless steel pot is not recognized as the same enemy we have been fighting when he appeared in the guise of infectious diseases. Inasmuch as there are things that can be done to block him in these now more significant guises, it seems logical to use the old fear of him to show him for the specter that he is. There should not be indiscriminate anxiety about accidents, but a healthy fear of a dangerous situation about which something may be done that will reduce the danger.

Experience with Home Care for Cardiac Patients

HENRY J. BAKST, M.D., F.A.P.H.A., and EDWARD F. MARRA, M.D.

Home-care-after-hospital-care programs are sometimes put forward in the light of the relief they provide for overcrowded wards, or as a way of reducing over-all costs of care of the medically indigent. This well controlled study points to a different picture of the benefits to be derived.

The past few years have been associated with an increasing interest in organized home medical care programs as an extramural function of hospitals and other institutions. Some efforts have been made to evaluate the nature of the service provided for the patient in his home by such an organized activity.[1] It is a matter of critical consideration to attempt to determine the effect of such a program on the rate of hospitalization and the length of hospital stay as well as to review the possible benefits which may accrue to the patient, his family, and the community. It seemed appropriate, therefore, to attempt to undertake a study of medical care services provided under these circumstances in terms of quality and cost.

Since interest in medical care services is often related to a specific category of disease, such as, arthritis, cancer, or epilepsy, and because a heterogeneous group of diseases presents such wide divergencies in medical care needs, it seemed desirable to study this problem in relation to a single predetermined disease category. The selection of a clinical situation which would permit comparability in terms of severity and duration of illness presents no small problem, but it appeared possible to accomplish this objective by limiting patient selection to those with cardiac disease. This, then, would allow for clinical and therapeutic classification according to standards accepted by the American Heart Association.[2] With such limitations in mind, a two-year study was undertaken in July, 1952, to determine the medical care implications involved in an intensive home care service for cardiac patients.

It was hoped that the results of this study would: (1) Clarify some of the confusion that exists in relation to the cost of home care services; (2) indicate whether or not the availability of such a program is associated with an alteration of the rate of utilization of other medical care facilities, particularly hospitals; (3) emphasize the nature and extent of services required by such patients in terms of clinical, social, and community activity; and (4) demonstrate the degree of clinical, social, and community coordination that is required in order to provide continuous and integrated patient care.

Method of Study

In order to arrive at answers to some of these problems in as objective a manner as possible, it appeared desirable to deal with two groups of patients who would be clinically, economically, and socially comparable. For this purpose, patients who were admitted to the medical wards of the Boston City Hospital who met the following criteria were assigned by random selection (coin flip) to a study or control group: (1) Only patients discharged from the hospital to

their own homes were accepted. (Patients discharged to nursing homes were excluded.) (2) The patient's cardiac classification (functional and therapeutic) must have been III-C or below on the current admission to the hospital. (Limitation of illness to this degree of severity almost automatically implied that continued medical care would be necessary after discharge from the hospital); and (3) the patient must not have been under the care of a private physician. The availability of a private physician for the study group would disrupt continuity of service as an organized facility. For the controls it would mean that some degree of home medical care would be available and thus make it difficult to compare the results.

Subsequent to discharge from the hospital, patients in the study group received individualized care on a 24-hour a day, seven-day a week call basis in accordance with the best standards of medical practice. Patients were visited at home or seen on an ambulatory basis as indicated by a second- or third-year hospital resident supervised by a qualified cardiologist and internist. Nursing care at home was provided by the Visiting Nurse Association. Social and economic evaluation of each patient in the study group was made by a full-time medical social worker. Additional needs of the patient were met through the utilization of social and health agencies as required.

No personal contact was made with patients in the control group after discharge from the hospital. These patients received their medical care as ambulatory patients in outpatient departments, by emergency physicians' visits at home, or by subsequent rehospitalization. Their medical care data was followed and kept up to date by a case aide who reviewed hospital and outpatient records and reports from the Visiting Nurse Association and the Vital Statistics Division of the Health Department.

The work load involved in following a group of severely ill patients with cardiac disease outside the hospital necessarily limited the number of patients who could be effectively followed. It was felt that approximately 50 patients in the study group would be a maximum number. The total number of 55 patients studied, therefore, while not statistically impressive, represents for all intents and purposes the maintenance of an average-sized ward with all of the patients severely and often critically ill. That such patients were scattered throughout the metropolitan area resulted in an additional geographical consideration which imposed problems of communication and transportation. These, however, are in effect the realistic problems that must be faced in dealing with a home care program.

The vital data of the two groups of patients indicate that the selection procedure operated to provide two highly comparable population samples. The sex, age, and marital status were practically identical in both groups (Table 1). The general median age of 64 years established the medical care problems as those characteristic of geriatrics. Since all patients came from the wards of the Boston City Hospital and did not have regular private physicians, they were reasonably comparable from the point of view of income level. Thirty-one per cent of the control group and 45 per cent of the study group received

Dr. Bakst is professor of preventive medicine and Dr. Marra is instructor in preventive medicine, Boston University School of Medicine, Boston, Mass. Dr. Bakst is also director, Outpatient and Home Medical Services, Massachusetts Memorial Hospitals.

This paper was presented before the Medical Care Section of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 15, 1954.

This study was supported by a grant from the Massachusetts Heart Association.

Table 1—Characteristics of Patient Groups

	Study Group	Control Group
Number of Patients	55	35
Sex		
Male	31	20
Female	24	15
Age		
Range	29–87	31–84
Mean	62.5	64.8
Median	63.5	64.5
Marital Status		
Married	33	14
Single	5	5
Widowed	12	10
Divorced	1	1
Separated	4	5

financial support from the Department of Public Welfare of the City of Boston.

The 55 patients in the study group were provided with medical care for a sum total of 14,393 patient days. The shortest period of observation was 10 days, the longest 586 days. The average period was 262 days. The 35 patients in the control group were followed for 10,253 days. The shortest period in this group was 17 days and the longest 588 days with an average of 293 days. These were considered to be reasonably comparable periods of observation.

A total of 1,515 home visits by physicians were made to patients in the study group. The usual visit consisted of the obtaining of historical data, the performance of a physical examination necessary for cardiac evaluation and regulation of therapy, reassurance of the patient, and interpretation of therapeutic aims and the physical limitations imposed by the disease process. Electrocardiograms were done in the home as indicated, as were venipunctures and thoracenteses. Miscellaneous medical services included dressing of varicose and postphlebitic ulcers, application of Unna's paste boot, and, in one instance, placement of improvised drainage (Southey) tubes. Patients in this group were referred to the Outpatient Department only for procedures which could not be carried out satisfactorily at home and for consultation with specialty services, such as ophthalmology, gastroenterology, and hematology. A total of 80 outpatient visits were made for such services.

Patients in the control group obtained physicians' services by attending the Outpatient Department and from occasional emergency visits made to the patients' homes by private physicians. The 35 patients in this group made 231 visits to the Outpatient Department during the period of observation. Physicians' visits at home, exclusively on an emergency basis, were sporadic single calls which almost invariably resulted in hospitalization of the patient. Visits of this nature averaged about one per patient during the period of observation.

The disproportion of physicians' visits between the two groups was paralleled by the rate of utilization of nursing service in the home of the patient. Well over half the patients in the study group received home visits by the Visiting Nurse Association as compared to less than one-third of the patients in the control group. Visiting nurse services were utilized in the areas of general nursing care, including routine observation of the patient's condition, general hygienic care, instruction of relatives in the technics involved in the care of the patient, interpretation of physician's orders, and special services including enemata, catheterizations, dressings, and the administration of parenteral medication. The Visiting Nurse Association also provided for physiotherapy, dietary instruction, and follow-up on low-salt regimens established for patients in the study group. Close cooperation with the Visiting Nurse Association had been an essential feature of the activities of the Home Medical Service out of which

Table 2—Service Data

	Study Group	Control Group
Physicians' visits	1,515	
Visits per patient	27.5	
OPD visits	80	231
VNA visits	1,030	393
Visits per patient	18.7	11.2
Per cent of patients visited	58.2	31.4
Frequency of visits	2–3*	1–2*
Hospitalization		
Total days	857	434
Number of admissions	50	39
Admission rate per 1,000 patients	909	1,115
Cardiac hospitalization		
Total days	203	239
Number of admissions	10	27
Admission rate per 1,000 patients	182	772
Noncardiac hospitalization		
Total days	654	215
Number of admissions	40	12
Admission rate per 1,000 patients	727	343

* Weekly

this study was conducted,[3] making for integrated and continuous observation of these severely ill patients.

Of particular interest was the difference in causes and rates of hospitalization in the two groups of patients (Table 2). Readmission rates calculated on the basis of 1,000 patients for the period of the study (21 months) indicate that the relative rate of hospital admission for the two groups of patients was essentially the same. Readmission to the hospital because of exacerbation of cardiac symptoms, however, occurred over four times more frequently in the control than in the study group. On the other hand, hospital readmission for noncardiac disease occurred more than twice as frequently in the study group than in the control group.

With a total of 13 deaths in the study group and 10 in the control group, it is apparent that the case-fatality rates showed no significant differences (Table 3). The magnitude of the general rate (26 deaths per 100 patients) for the total number of patients is a reflection of the illness severity.

Discussion

An important consideration in the provision of medical care is the availability of the needed service at the proper time and place. There is no question that many situations require the facilities, equipment, and services that are best obtained in a hospital. On the other hand, there are also situations in which continued hospitalization is both profitless for the patient and

Table 3—Case Fatality

	Study Group		Control Group	
	Number of Cases	Deaths per 100	Number of Cases	Deaths per 100
Total	13	24	10	29
Cardiac	6	11	8	23
Noncardiac	7	13	2	6

Table 4—Cardiac Diagnoses and the Noncardiac Causes for Hospital Admission

Cardiac diagnosis	Study Group	Control Group
Arteriosclerotic heart disease	25	16
Hypertensive arteriosclerotic heart disease	12	9
Rheumatic heart disease	11	6
Hypertensive heart disease	4	2
Cor pulmonale	2	2
Luetic heart disease	1	0
	55	35
Noncardiac hospital admissions		
Asthma, bronchial		1
Bronchitis	1	
Bronchopneumonia	4	2
Calculus, ureteral	1	
Cellulitis	2	
Cerebral vascular accident	1	1
Dental extraction	1	
Glaucoma	1	
Leukemia, myelogenous	1	
Malnutrition		1
Nephritis, chronic glomerular	1	
Prostatic obstruction	1	
Psychiatric	7	2
Pulmonary fibrosis	1	1
Pyelonephritis	1	
Social	2	
Surgical	8	4
Thrombophlebitis	1	
Ulcer	3	
Uremia	1	
Urethral caruncle	1	
Vaginal bleeding	1	

needlessly extravagant for the community. Although the circumstances which determine the most desirable time and place for medical care are fundamentally clinical, factors of a socioeconomic and emotional nature must also be considered.

These broader aspects of patient care are often difficult to deal with satisfactorily under circumstances of hospitalization or ambulatory service. Home care, however, if effectively organized and developed, represents an opportunity permitting continuous, integrated, and comprehensive service. In this fashion, such an activity may assist materially in meeting health needs adequately. It is of importance, therefore, to attempt to evaluate as accurately as possible some of the specific contributions that a home care program may make to the total picture of medical care.

Health Maintenance and Disease Prevention—The experience in this study indicates that home care should be of a general nature and not restricted by age, sex, or disease category. Great difficulty was experienced in avoiding direct medical service to members of the patients' families (this was not felt to be within the framework of this study). In some instances, it was essential, however, to accept a family member for care in order to preserve satisfactory relationships with the patient and the family. This type of pressure is an ever-present concomitant of medical practice and, from most points of view, a desirable one.

The amount of associated disease found in the study group indicates that comprehensive medical care programs actually increase the variety of services that are needed by groups similar in makeup to the study group. This, however, emphasizes a unique contribution of a home care program in that it serves a case-finding function in uncovering unsuspected illness and also permits the opportunity for early and accurate diagnosis of incipient concomitant disease. Attempts to develop programs for a single disease category are probably unjustified except to form a base for broader and more inclusive development.

Socioeconomic and Emotional Factors—The selection of patients from the wards of a municipal hospital served to develop two groups of patients in which the average income was low (38 per cent were "on relief"), the housing was

poor, and the social problems abundant. Despite these hazards, only two circumstances arose in which conditions made it quite impossible to maintain adequate treatment in the home of the patient. These patients were rehospitalized.

The severity of the socioeconomic circumstances is reflected by the number of visits made by the medical social worker and by the fact that over 30 health and social agencies in the community were involved in providing for these patients and their families. This does not include the eight hospitals from which direct services were obtained.

The services of the medical social worker varied from the direct provision of temporary financial assistance through the whole gamut of agency referral. It should be emphasized that a large segment of the social worker's activities were with the patients' families. It was necessary to extend care designed primarily for an individual to include the family group or household. This same almost irresistible demand for service affected the physician as well as auxiliary health personnel. As a result of the combined efforts of physician, nurse, and social worker, the health, emotional, and economic needs of patients were met with varying degrees of success. The careful interpretation of the illness situation to the patient and the family resulted in improved acceptance of the problem and considerable relief of emotional stresses.

Hospitalization—The purposeful selection of a specific disease category in this study provided an opportunity to consider the effect of intensive home care in relation to the rate of hospitalization. It is apparent that medical care in the home of the patient may reduce markedly the rate of hospitalization for heart disease. However, while this is true of the disease, it does not necessarily hold for the patient. In this study the factor of advanced age introduced the problem of multiple concomitant disease. Under these circumstances, the more comprehensively the patient is observed, the more extensive is the medical care the patient requires. Thus, in the study group of patients, while hospitalization for the manifestations of cardiac disease was markedly reduced, the rate of hospitalization for noncardiac disease was materially increased. The total rate of hospitalization in both groups of patients for all causes, therefore, was essentially comparable, even though the causes of hospitalization and the quality of medical care in each group show obvious differences.

Cost—It is obviously difficult to deal with the cost of service in the home as an isolated aspect of medical care, particularly if such a service is considered to be but a phase in the maintenance of continuous and comprehensive planning. While the cost of maintaining a patient in his home may be less than the cost of hospitalization, this does not necessarily reduce the over-all cost of medical care. In this experience the total number of hospital days were approximately comparable in both groups of patients. The provision of home care for the study group, therefore, served to increase the over-all cost of medical care by the cost of this additional service.

Furthermore, it is felt that a program concerned with older patients or chronic illness can function effectively only when related to hospital facilities in which the home service is an instrumentality permitting the continuous provision of comprehensive care. Continuity of medical service demands ease of hospitalization when indicated and the accessibility of rehabilitative services, two needs which demand the availability of a general hospital as the administrative and integrative center of the program. Under these circumstances, the attempt to separate the cost of home care from hospital care becomes difficult and perhaps somewhat unrealistic.

Conclusions

A comparison of the experience obtained with these two groups of patients suggests that:

The establishment of home care programs for the purpose of providing service for limited disease categories is probably unjustified. A home care program is a most effective addition to medical care services if it serves a general medical function. Indeed, it is difficult to visualize the development of comprehensive service in the absence of such an activity.

A material contribution to community health may be made through the case-finding function of home care programs and the early diagnosis and treatment of incipient illness.

Comprehensive care involves a qualitative as well as a quantitative increase in services. The provision of home care for older and chronically ill patients, therefore, introduces an additional cost which can be justified only on the basis of better and more effective service.

REFERENCES

1. (a) Bakst, H. J. Domiciliary Medical Care and the Voluntary Teaching Hospital. A.J.P.H. 43:589–595 (May), 1953.
   (b) Cherkasky, M. The Montefiore Hospital Home Care Program. Ibid. 39:163–166 (Feb.), 1949.
   (c) Holmes, E. M.; Nelson, K.; and Harper, C. L., Jr. The Richmond Home Medical Care Program. Ibid. 43:596–602 (May), 1953.
   (d) Kogel, M. D. Some Aspects of the Home Care Program Conducted by the New York City Department of Hospitals. Ibid. 43:584–588 (May), 1953.
   (e) Wing, F. E. Medical Care of the Sick in Their Homes. Boston Dispensary, Boston, Mass., 1940.
2. New York Heart Association Criteria Committee: Nomenclature and Criteria for Diagnosis of Diseases of Heart and Blood Vessels (5th ed.). New York: New York Heart Association, 1953.
3. Bakst, H. J. A Domiciliary Medical Care Program as an Integrated Facility in the Medical Curriculum. J. A. Am. M. Coll. 25:406–416 (Nov.), 1950.

A New Journal of Chronic Diseases

The Journal of Chronic Diseases began publication on a monthly basis in January, 1955. Its inspiration, as indicated in its birth announcement, was the report in 1952 of the President's Commission on the Health Needs of the Nation, in which much space was devoted to chronic illness and rehabilitation. The new publication is reportedly the first medical journal "specifically devoted to the problems of the chronically ill" of all ages. "In recognition of the urgent fact that chronic illness affects persons of all ages, this Journal is more interested in its beginnings than in its endings."

An editorial board of 32 persons represents nearly as many disciplines. Public health is represented by Drs. Lester Breslow, J. R. Heller, and Hugh R. Leavell; physical medicine and rehabilitation by Drs. Michael Dasco and Howard A. Rusk. The first issue has original communications, one extensive review article, a number of signed editorials, and a book review section.

Manuscripts should be sent to the editor, Joseph Earl Moore, M.D., 804–7 Medical Arts Bldgs., Baltimore 1, Md. The journal is published by the C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, Mo., to whom subscriptions should be sent; $12.50 annually.

Growth Characteristics, Virulence, and Cytochemical Properties of Tubercle Bacilli Recovered from Patients Treated with Isoniazid

ROBERT A. PATNODE, Ph.D.; MARTHA C. DAIL; and PAUL C. HUDGINS

Isoniazid resistance in the tubercle bacillus remains a matter of moment to public health administration, so researches in the behavior of the affected organisim—in the test tube as well as in the living tissue—concern all who deal with the prevention and care of the still most important communicable disease.

It appears well established that standard strains of tubercle bacilli made highly resistant to isoniazid in the laboratory, as well as bacilli isolated from certain patients under treatment with isoniazid, demonstrate a reduced virulence for guinea pigs.[1-3] It is also of interest to note that the H37Rv strain of Mycobacterium tuberculosis made resistant to isoniazid loses its ability to grow in a synthetic liquid medium, although it grows as well as the parent susceptible organisms in the same medium enriched with bovine serum or fraction V albumin.[4] Similarly, nonpathogenic strains of tubercle bacilli from patients under isoniazid therapy have been encountered which fail to grow on oleic acid albumin medium and American Trudeau Society egg medium.[2]

It has been postulated that both the altered growth characteristics [4] and the attenuated virulence [2] of isoniazid-resistant bacilli might be attributed to the acquisition of a growth factor requirement not possessed by the parent strain. In line with these assumptions it was thought to be of some value to determine whether bacilli which have acquired resistance to isoniazid and, more important, have a reduced virulence for guinea pigs, might also have developed a special growth requirement for a substance not available in normal guinea pig tissue.

The present investigation is also concerned with an attempt to determine whether attenuation of virulence is accompanied by any alteration in the ability of the organisms to form cords [5] and bind neutral red [6] or in their inability to decolorize certain oxidation-reduction dyes.[7]

Methods

For use in these studies 13 cultures were obtained from resected necrotic lesions of patients who had received long-term (six months or longer) isoniazid therapy.* A typically virulent

* These organisms were kindly supplied to us by Sidney Bernstein, formerly bacteriologist at the Veterans Administration Hospital, Sunmount, N. Y.

Dr. Patnode and Mr. Hudgins are with the Tuberculosis Research Laboratory, Veterans Administration Hospital, Washington, D. C. Miss Dail is with the Department of Bacteriology, Army Medical Service Graduate School, Washington, D. C.

This paper was presented before the Laboratory Section of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 14, 1954.

strain of M. tuberculosis, H37Rv, was used as a control. Throughout the course of these experiments the cultures were maintained in Dubos Tween albumin liquid medium.[8]

Isoniazid Susceptibility Tests—The susceptibility to isoniazid of each of the test organisms was determined in Tween albumin medium using final concentrations of 0.2, 1.0, 5.0, 10.0, and 20.0 micrograms per ml. plus control tubes containing no drug. Each tube was inoculated with 0.1 ml. (0.15 mg.) of a seven-day-old culture in Tween albumin medium. The tubes were incubated at 37° C. and the results were read and recorded at the end of eight days as the lowest concentration capable of completely inhibiting growth.

Virulence for Guinea Pigs—Guinea pigs, weighing on the average 225 gm. were inoculated subcutaneously in the right inguinal region with 0.5 ml. (1.5 mg.) of 15-day-old cultures of the test organisms in Tween albumin medium containing a concentration of isoniazid lower than the minimal inhibiting concentration. Each culture was inoculated into a group of four guinea pigs. All the animals survived an eight-week infection period, at the end of which time certain of them were tuberculin tested and all were sacrificed and autopsied. Guinea pigs that had been inoculated with representative cultures resistant to 0.2, 1.0, and 20.0 μg. of isoniazid and also organisms completely susceptible to 0.2 μg. were tested with 5 per cent O.T. and results were recorded at the end of 48 hours. The virulence was graded according to the following scale:

± — lesion at site of inoculation only
\+ — inguinal lymph nodes only
++ — inguinal and iliac lymph nodes
+++ — lymph nodes and spleen
++++ — lymph nodes, spleen, and liver
+++++ — lymph nodes, spleen, liver, and lungs

Oxidation-Reduction Dye Tests—The action of the test organisms on phenol indophenol, sodium benzenoneindo-3-chlorophenol, and sodium, 2, 6-dibromobenzenone-indophenol was determined using the test tube modification[9] of the oxidation-reduction dye test first described in 1952.[7] Twenty-eight-day-old cultures on Lowenstein medium were used and M. phlei was included as a typically avirulent control. The latter organism decolorized the three dyes completely within 15 minutes. Since the results with all three of the dyes were invariably identical, they have been combined for convenience in tabulation.

Neutral Red Tests—Cultures of the organisms grown in Lowenstein (31-day-old) and Tween albumin (16-day-old) media were examined for their ability to bind neutral red using the technic described by Dubos and Middlebrook.[6]

Growth in Serum and in Tissue Extracts—A modified Proskauer and Beck synthetic medium[10] was used to determine the growth response of the test organisms in the presence of bovine and guinea pig serum and saline extracts of guinea pig lung and spleen. Duplicate tubes of the liquid synthetic medium (5 ml. amounts) containing bovine or guinea pig serum in a final concentration of 5 per cent, plus control tubes containing no serum, were inoculated with 0.1 ml. (0.3 mg.) of 15-day-old cultures of each of the organisms in the Tween albumin medium. Results were recorded after three weeks' incubation at 37° C.

For the preparation of tissue extracts the lungs and spleens from five normal guinea pigs were removed and immediately frozen. On the following day they were thawed, washed free of superficial blood, pooled, and weighed. Homogenates (10 per cent) of the lungs and spleens in physiological saline were prepared in a Waring blendor and these materials were then passed through a Fisher homogenizer and centrifuged at

3,000 rpm for 20 minutes. The supernatant fluid was passed through a fritted glass (fine) filter and the filtrate was added to the liquid synthetic medium in a final concentration of 10 per cent. Sterilization was accomplished by passing them through fritted glass (ultrafine) filters. The growth response of the test organisms in the presence of the lung and spleen extracts was examined in a manner similar to that used in the serum studies that have been described.

Cord Formation—The ability of the organisms to form cords was determined according to the procedure recommended by Middlebrook, et al.[5] Tubes of the Dubos medium containing albumin but no Tween were inoculated with 0.1 ml. (0.25 mg.) amounts of Tween albumin cultures of each of the test strains. After four days' incubation at 37° C. samples were removed, stained by the Ziehl-Neelsen technic, and examined for the presence of serpentine cords. An avirulent strain (H37Ra) was incapable of forming cords under the conditions described.

Results

The results of the studies on drug susceptibility and guinea pig virulence are presented in Table 1. It will be seen that the organisms isolated from patients who had received long-term isoniazid therapy possessed varying degrees of resistance to the drug in vitro. Two of them were completely susceptible to the concentrations used, three were resistant to 20.0 μg., and the others demonstrated intermediate degrees of resistance.

Although there were in some cases rather marked differences among the individual animals in a given group, it appears reasonable to conclude that the tubercle bacilli isolated from patients who had received isoniazid were less virulent for guinea pigs than the H37Rv strain. The tuberculin tests were for the most part strongly to weakly positive.

It is obvious from an examination of Table 2 that the organisms did not differ from the typically virulent H37Rv strain in their ability to bind neutral red and form cords, or in their inability to decolorize the oxidation-reduction dyes.

The results of the studies concerned with the growth response in serum and tissue extracts proved to be rather interesting (Table 3). Those organisms resistant to 0.2, or more μg. of isoniazid per ml. of medium have apparently lost their ability to grow in the synthetic liquid medium. However, they grew as well as the completely susceptible organisms, including H37Rv, in the presence of available nutrients from bovine serum, guinea pig serum, and the extracts of guinea pig lung and spleen.

Discussion

The demonstration that tubercle bacilli isolated from patients under isoniazid therapy have an attenuated virulence for guinea pigs was not particularly surprising in view of recent reports in the literature.[1-3] However, on examination of the present findings it is apparent that with the technic used, the reduction of virulence does not correlate with the degree of resistance to isoniazid in vitro. Organisms resistant to 20.0 μg. of isoniazid, for example, were not significantly more nor less virulent for guinea pigs than bacilli that were completely susceptible. This would confirm the findings of Steenken and Wolinsky.[3]

The fact that tubercle bacilli of reduced virulence isolated from patients under isoniazid therapy retain their ability to bind neutral red[1] has been confirmed in the present study. In this respect they resemble BCG organisms which, although formerly fully virulent bovine bacilli, have lost their virulence

Table 1—Isoniazid Susceptibility and Virulence for Guinea Pigs of Tubercle Bacilli Recovered from Patients Treated with Isoniazid

Culture Number	Isoniazid * Susceptibility (μg./ml.)	Virulence for Guinea Pigs †	Culture Number	Isoniazid Susceptibility (μg./ml.)	Virulence for Guinea Pigs
1	5.0	1. ± 2. + 3. + 4. ++++	8	5.0	1. ++ 2. ++ 3. ++ 4. ++
2	5.0	1. ++ 2. ± 3. + 4. +	9	> 20.0	1. + 2. ++ 3. ++ 4. +
3	5.0	1. + 2. +++ 3. + 4. +	10	> 20.0	1. + 2. ++ 3. + 4. +
4	1.0	1. + 2. − 3. ++ 4. +	11	> 20.0	1. ± 2. ± 3. − 4. +
5	0.2	1. + 2. ± 3. + 4. +	12	10.0	1. ++ 2. ± 3. + 4. +
6	5.0	1. ++ 2. + 3. ++ 4. ++++	13	0.2	1. + 2. + 3. ++ 4. ++
7	5.0	1. ++ 2. ++ 3. ++++ 4. ++	H37Rv	0.2	1. +++++ 2. +++++ 3. +++++ 4. +++++

* Lowest concentration capable of completely inhibiting growth for 8 days.
† For explanation of symbols, see text.

Table 2—Cytochemical Characteristics and Cord Forming Properties of Tubercle Bacilli Recovered from Patients Treated with Isoniazid

Culture Number	Oxidation-Reduction Dye Test	Neutral Red Test	Cord Formation	Culture Number	Oxidation-Reduction Dye Test	Neutral Red Test	Cord Formation
1	−*	+	+	8	−	+	+
2	−	+	+	9	−	+	+
3	−	+	+	10	−	+	+
4	−	+	+	11	−	+	+
5	−	+	+	12	−	+	+
6	−	+	+	13	−	+	+
7	−	+	+	H37Rv	−	+	+

* No decolorization.

Table 3—Growth Response of Tubercle Bacilli Recovered from Patients Treated with Isoniazid—the Effect of Serum and Guinea Pig Tissue Extracts

Culture Number	Basal Medium	Basal Medium + Bovine Serum	Basal Medium + Guinea Pig Serum	Basal Medium + Guinea Pig Lung Extract	Basal Medium + Guinea Pig Spleen Extract
1	−	++++	++++	++++	+++
2	−	++++	++++	++++	+++
3	−	++++	++++	++++	+++
4	−	++++	++++	+++	+++
5	++++	++++	++++	++++	+++
6	−	++++	++++	++++	++++
7	−	++++	++++	+++	++++
8	−	++++	++++	+++	+++
9	−	++++	++++	+++	+++
10	−	++++	++++	+++	+++
11	−	++++	++++	+++	+++
12	−	++++	++++	+++	+++
13	++++	++++	++++	+++	+++
H37Rv	++++	++++	++++	++++	++++

and yet still possess the capacity to bind neutral red.[11, 12] In their inability to decolorize certain oxidation-reduction dyes they resemble other strains of attenuated virulence (H37Ra, BCG).[7] Their capacity for cord formation in liquid medium in the absence of Tween is more characteristic of BCG organisms, however, than H37Ra, since the latter have never been observed to form cords under any condition of growth.[5]

The results of the growth studies with serum and tissue extracts would seem to indicate that the strains of tubercle bacilli studied here have not lost their virulence for guinea pigs solely by virtue of having acquired a special growth requirement for a substance not available in normal guinea pig tissue. It is realized that multiplication alone is not necessarily synonymous with virulence. Moreover, it is highly unlikely that the conditions used in these investigations duplicated exactly conditions as they exist in vivo. It is possible, for example, that the treatment used in the preparation of tissue extracts might have rendered free and available to the bacilli certain substances which, in the intact organ, might normally be unavailable. The results of a recent study by Karlson and Ikemi[13] are of interest in view of the findings obtained in the present study. Isoniazid-resistant tubercle bacilli were found able to disseminate from the site of inoculation and to produce lesions in the internal organs of guinea pigs during at least the first 21 days of infection in a manner comparable to isoniazid-susceptible organisms. The progression of the infection was altered at some period between the 21st and 88th day resulting in arrest and regression of the lesions. This appears to be suggestive, though not necessarily conclusive, evidence that the organisms were capable of multiplication in the host environment.

It should be pointed out that since completion of the studies reported herein, evidence has been presented by Fisher[14] that hemin functions as a growth factor for certain isoniazid-resistant, growth factor-requiring vari-

ants of H37Rv. The minimum amount of hemin which would support the growth of these variants was approximately 1 μg./ml. of basal medium. Fisher suggests that the growth factor activity of bovine serum and fraction V albumin may be due to traces of hemin. If this work is confirmed, it seems likely that the growth factor activity of guinea pig serum and tissue extracts might also be ascribed to their content of hemin.

In line with the report by Fisher [14] we have been able to confirm the transient character of the growth factor requirement of the strains of tubercle bacilli used in the present investigation. After several subcultures in the absence of isoniazid these organisms appeared to lose the need for a growth factor and grew abundantly in the liquid synthetic medium.

Summary

Thirteen strains of tubercle bacilli isolated from patients who had received isoniazid were found to be less virulent for guinea pigs than the typically virulent H37Rv strain; however, there was no correlation between the reduction of virulence and the degree of resistance to the drug in vitro.

Those organisms resistant to 0.2, or more, μg. of isoniazid have apparently lost their ability to grow in synthetic liquid medium; however, they grow as well as the completely susceptible organisms, including H37Rv, in the presence of available nutrients from bovine serum, guinea pig serum, and extracts of guinea pig lung and spleen. This would seem to indicate that the organisms have not lost their virulence for guinea pigs solely by virtue of having acquired a special growth requirement for a substance not available in normal guinea pig tissue.

The organisms did not differ from the typically virulent H37Rv strain in their ability to bind neutral red and form cords, or in their inability to decolorize certain oxidation-reduction dyes.

REFERENCES

1. Peizer, L. R.; Wideiock, D.; and Klein, S. Virulence in Guinea Pigs of Isoniazid-Resistant Cultures Isolated from Clinical Specimens. Am. Rev. Tubere. 68:290–291 (Aug.), 1953.
2. Middlebrook, G., and Cohn, M. L. Some Observations on the Pathogenicity of Isoniazid-Resistant Variants of Tubercle Bacilli. Science 118:297–299 (Sept. 11), 1953.
3. Steenken, Jr., W., and Wolinsky, E. Virulence of Tubercle Bacilli Recovered from Patients Treated with Isoniazid. Am. Rev. Tubere. 68:548–556 (Oct.), 1953.
4. Fisher, M. W. The Altered Growth Characteristics of Isoniazid-Resistant Tubercle Bacilli. Ibid. 66: 626–628 (Nov.), 1952.
5. Middlebrook, G.; Dubos, R. J.; and Pierce, C. Virulence and Morphological Characteristics of Mammalian Tubercle Bacilli. J. Exper. Med. 86:175–184 (Aug.), 1947.
6. Dubos, R. J., and Middlebrook, G. Cytochemical Reaction of Virulent Tubercle Bacilli. Am. Rev. Tubere. 58:698–699 (Dec.), 1948.
7. Wilson, F. J.; Kalish, C.; and Fish, C. H. Use of Oxidation-Reduction Dyes in the Determination of Virulence of Mycobacteria in vitro. Ibid. 65:187–193 (Feb.), 1952.
8. Dubos, R. J., and Middlebrook, G. Media for Tubercle Bacilli. Ibid. 56:334–345 (Oct.), 1947.
9. Wrinkle, C. K., and Patnode, R. A. A Test Tube Modification of the Oxidation-Reduction Dye Test for the Determination of Virulence of Mycobacteria in vitro. Ibid. 66:99 (July), 1952.
10. Youmans, G. P., and Karlson, A. G. Streptomycin Sensitivity of Tubercle Bacilli. Ibid. 55:529–535 (June), 1947.
11. Richmond, L., and Cummings, M. M. An Evaluation of Methods of Testing the Virulence of Acid-Fast Bacilli. Ibid. 62:632–637 (Dec.), 1950.
12. Hauduroy, P., and Posternak-Gallia, Y. Sur une Reaction Cytochimique en Rapport avec Virulence des Mycobacteries. Ann. Inst. Pasteur 77:91–93 (July), 1949.
13. Karlson, A. G., and Ikemi, Y. Comparison of the Virulence for Mice and Guinea Pigs of an Isoniazid-Sensitive Tubercle Bacillus and Its Isoniazid-Resistant Variant. Proc. Staff Meet. Mayo Clin. 29: 119–124 (Feb. 24), 1954.
14. Fisher, M. W. Hemin as a Growth Factor for Certain Isoniazid-Resistant Strains of Mycobacterium Tuberculosis. Am. Rev. Tubere. 69:797–805 (May), 1954.

Standardization of Diagnostic Methods for Gonococcal Infections

LIEUTENANT COLONEL PAUL S. PARRINO, MC, USA; CAPTAIN EDWARD J. O'SHAUGHNESSY, MC; and FIRST LIEUTENANT JOHN D. WHITE, MSC.

For sound reasons a convincing plea is made for the general adoption of standard laboratory technics as set forth in the chapter "the gonococcus" of Diagnostic Procedures and Reagents, American Public Health Association.

Increasing venereal disease rates and the persistence of gonorrhea especially as a major public health problem —despite the universal use of antibiotics —are almost daily being called to the attention of both public health workers and the public. The apparent failure of the medical and public health professions to conquer the age-old problem of gonorrhea should cause all public health workers to ponder the significance of published statistics on the most frequently diagnosed venereal disease.

The first consideration in the control of any communicable disease is "Recognition of the disease and reporting." Inquiry into the basis used for the diagnosis of gonococcal infections in males and females in various sections of the United States reveals an amazing diversity of opinion about what constitutes adequate grounds for making a diagnosis, instituting treatment, and reporting cases to the health department. It is essential that laboratory workers, health officers, and practicing physicians agree on the standardization of diagnostic methods for gonococcal infections in order to evaluate published statistics and for planning purposes. It is urgently recommended that in reporting all cases of gonorrhea the method used in making the diagnosis be stated.

The diagnosis of gonococcal infections falls into four broad categories: (1) laboratory methods, (2) clinical examination, (3) therapeutic response, and (4) epidemiologic methods.

The laboratory method, especially the complete identification of the gonococcus by cultural technics, is the only completely reliable diagnostic method and the only one that is acceptable from a medicolegal standpoint. The problem of standardization of laboratory diagnosis was thoroughly studied and published in the APHA Year Book for 1937 as "Recommended Methods for the Laboratory Diagnosis of Gonococcal Infections," [1] and also in Diagnostic Procedures and Reagents [2] by Charles M. Carpenter, Ph.D., M.D. This manual is now in the process of revision. The uniform application of the methods described in the latter publication would greatly improve the status of diagnosis and reporting of gonorrhea.

Diagnosis by Clinical Examination— It is recognized that, occasionally, in the absence of immediately available and

Colonel Parrino is preventive medicine officer; Captain O'Shaughnessy is urologist and Lieutenant White is research bacteriologist, Genito-Urinary Research Project, U. S. Army Hospital, Camp Kilmer, N. J.

This paper was presented before the Laboratory Section of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 13, 1954.

reliable laboratory services, the diagnosis and treatment of gonococcal infections must be made on the basis of a complete history and physical examination. This procedure is more difficult in the female and in chronic cases in the male. In addition, experienced gynecologists feel justified in making the diagnosis in certain cases in the female, even when both smear and culture preparations are negative for the gonococcus. However, the reliance upon strictly clinical evidence introduces a very large chance of error. The authors have made an extensive study of urethral discharge in the male,[3] and later studies continued for two years. Of 3,757 cases examined by clinical and laboratory methods, including smears and culture, 51 per cent were found to have gonococcal infection and 49 per cent nongonococcal urethritis. It can be seen that where routine laboratory examinations are not performed the margin of error is considerable. In our study it has been found that by careful evaluation of the history, symptoms, and character of the urethral discharge in the male a correct diagnosis can be made before completion of the laboratory examination in a high percentage of cases on the following points:

Gonococcal Infections—(1) The incubation period is found to be rather constant, the majority of cases developing symptoms in from three to seven days following exposure; (2) the predominant symptom is a true burning sensation inside the urethral canal during urination; and (3) the discharge is profuse, purulent, thick, and of a yellowish color.

Nongonococcal Urethritis—(1) The time of onset since the last exposure is variable and may be from one day to one month or longer; (2) the predominant symptom is an itching or tickling sensation in the urethral canal and pain referred to the glans. These symptoms are usually independent of urination; and (3) the discharge is usually less profuse, less purulent, thinner, and of a milky white or grayish color. It should be borne in mind, however, that many cases of purulent nongonococcic urethritis present a urethral discharge grossly indistinguishable from that seen in gonorrhea.

In chronic gonorrhea in women the confirmation of a diagnosis becomes more difficult when smears and cultures are negative. Mahoney, et al.,[4] showed in their study of 2,429 women of the prostitute class that the majority displayed varying degrees of cervicitis which might commonly have been considered to be the result of chronic gonococcic infection. Yet, in this group, as a result of a single cervical culture attempt, positive findings were recorded in only 21 per cent. Their study also revealed that in chronic gonorrhea in women cultures from the cervix were found to be positive in a much larger proportion of cases than cultures taken from the urethra. They also recommended that combining the urethral and cervical secretions in a single carrying tube was a feasible and economical procedure. They further concluded that it does not appear that the menstrual cycle plays any definite role in determining the incidence of culture positivity in untreated chronic gonorrhea in women.

Dr. Anna Nimelman,[5] co-author of the above study, recommends the following criteria in making a presumptive diagnosis of chronic gonorrhea in women on a clinical basis when both smears and cultures are negative: (1) history of sexual promiscuity and previous pelvic inflammatory disease, or both; (2) evidence of Bartholin gland infection; (3) presence of pus in the urethra and involvement of Skene's glands; (4) cervicitis, especially with erosion, and the presence of purulent or mucopurulent cervical discharge; and (5) evidence of salpingitis.

Diagnosis of Gonococcal Infection

from Therapeutic Response to Adequate Dosage of Penicillin—In the absence of reliable laboratory service this procedure is much more reliable in the male than in the female. The clearing of all symptoms and cessation of a purulent urethral discharge in the male within 24–48 hours following the injection of penicillin is presumptive evidence of gonorrhea in most cases. On the contrary, urethral discharges in the male which do not clear up promptly on administration of penicillin or even become more profuse are usually nongonococcal in nature.

The large proportion of patients with nongonococcal urethritis who state that they were originally diagnosed as gonorrhea, but in whom penicillin failed to effect a cure, is further evidence for more efficient application of the recommended laboratory procedures.

Epidemiologic Methods of Diagnosis—This method is especially applicable to the treatment of females who have had intercourse with males in whom the diagnosis of gonorrhea has been confirmed by laboratory methods. This procedure is now widespread and generally accepted as helpful in the long-range fight against gonorrhea. However, these contacts should be given adequate clinical and laboratory examinations which may show that multiple injections of penicillin and other treatments are needed. Where contacts treated only on epidemiologic evidence are reported as cases of gonorrhea, this should be stated in the report.

The medical profession has believed for many years that laboratory methods for the diagnosis of gonorrhea is essential in most cases. However, the importance of correct diagnosis of gonococcal infections was brought into sharp focus with the introduction of the antibiotics. The occurrence of so-called penicillin-resistant strains of the gonococcus has revealed the fact that almost always an error in the diagnosis was made. Hughes and Carpenter [6] report a study of 216 men with alleged penicillin-resistant gonorrhea which revealed only 19 cases, or 9 per cent, to have gonorrhea, with 86, or 40 per cent, asymptomatic at the time of examination. Of the remaining 111 men, 93 had nongonococcal urethritis and 18 had other forms of disease of the genitourinary tract. These authors state that only three out of 19 cases of chronic gonococcal infections could be diagnosed by smear alone and in 16 cases the diagnosis was made on culture. They conclude that the erroneous diagnosis of nongonococcal urethritis as chronic gonococcal urethritis is due to the incorrect staining of films for the gonococcus by Gram's method, especially the overdecolorization of Gram-positive cocci causing these to be reported as Gram-negative.

Kiesselbach [7] reports on several studies made to show the inaccuracies of diagnosis. A New England clinic revealed that half the males referred because of gonorrhea were found to have nongonorrheal infection. Of 400 patients referred to a rapid treatment center with diagnosis of "gonorrhea," only 39.4 per cent were found to have gonorrhea when subjected to confirmation by culture and fermentation tests. Of 213 cases already diagnosed as gonorrhea on clinical and slide evidence by local health departments, only 46 per cent could be confirmed as actually having gonorrhea. Of a large number of girls between the ages of 11 and 18 admitted to a state reformatory, 80 per cent were found to have positive clinical and slide tests for "gonorrhea." A retest of these individuals using the carbohydrate fermentation tests revealed none of them to be infected with the disease. A private urologist in Philadelphia reports that only one man in five referred to him with urethritis had gonorrhea. An Armed Forces study in the Pacific made as a result of

a surprise inspection found that 2.9 per cent of the men were infected with gonorrhea and 12.4 per cent with nongonococcic urethritis.

Our study of 3,757 cases of male urethritis, showing 51 per cent positive for the gonococcus, is in close agreement with the first three studies reported by Kiesselbach. During the studies we found that the principle source of error was the decolorization of the Gram-positive cocci which are found in nongonococcic urethritis. In checking smears against cultures it was found that there was a wide variation in the percentage of correct diagnosis of smears stained by different technicians. Mahoney, et al.,[4] presented spread preparations from identical material to three experienced workers for examination. The spreads were prepared from material collected from 664 female patients, of whom 140 were found by the culture method to harbor the gonococcus. They report their results: "One microscopist reported 164 gonococci-positive spreads; a second found characteristic organisms in 60 instances; and a third recorded only 44 positive findings. This degree of divergent reports on identical material forces the assumption that spread findings in secretions from this type of patient introduce the factor of individual interpretation to an extent which in a critical study renders the results of questionable value."

A recent survey made by Vandow[8] reveals that during 1953, 6,216 males were admitted to New York City clinics for acute gonorrhea. During the same period 781 males were admitted for nonspecific urethritis (11.2 per cent of the total number of cases of male urethritis seen in their clinics). Dr. Vandow also made a preliminary study to determine the relative reliability of smears and cultures in the diagnosis of gonorrhea in women. In a sample group of 2,306 women examined at one New York facility the following results were obtained: 6 per cent were found infected by laboratory methods.

	Per cent of Total Cases	Per cent of Positive Cases
67 cases had negative smears and positive cultures	2.9	48.2
27 cases had positive smears and negative cultures	1.2	19.4
45 cases had positive smears and positive cultures	2.0	32.4

Edelson and Hresko of the Newark Health Department clinic[9] made a study of 315 consecutive admissions of women to that clinic to determine the efficiency of smear versus culture in the diagnosis of gonococcal infection in the female. Of the 315 cases, 108, or 34.3 per cent were positive for the gonococcus. Diagnosis was made as follows:

	Cases	Per cent of Positive Cases
Smear positive, culture negative	2	1.9
Smear negative, culture positive	94	87.0
Smear positive, culture positive	12	11.1

It was also found that 95 cases were found to have a Trichomonas infection. The patients in the clinic were mainly individuals named as contacts of cases of gonorrhea; those referred to the clinic by other clinics and private physicians because of a discharge; and those who reported voluntarily. In addition, some of those examined were applicants for health cards.

Ferguson[10] advised us that in a recent series of 106 cases of men referred to him with urethritis, only 20 (18.9 per cent) were positive for the gonococcus and 86 were suffering from nongonococcal urethritis. Dr. Ferguson believes that a large number of these latter infections were postgonococcal urethritis in men who had received penicillin treatment aboard ship or elsewhere for gonorrhea. He believes that in these cases the penicillin destroys the gonococci and that the persistent

urethritis is due to the mixed organisms. In the Camp Kilmer clinic we see many similar cases. On the other hand, inquiry at other clinics elicits the information that cases of nongonococcal ininfections are rarely seen and almost all cases of urethritis, especially in males, are diagnosed as gonorrhea.

The studies cited show the enormous variation in the percentage of cases of urethritis and GU tract infections in the male and female that are diagnosed as gonococcal. This should suffice to show the urgency for the adoption of standards for the diagnosis of gonococcal infections and the inauguration of a check system for all types of laboratories to determine their accuracy.

Every laboratory worker and physician who is called upon to make a diagnosis of gonococcal infection should become familiar with the contents of the chapter "The Gonococcus" cited earlier in this paper. All experienced workers are agreed that both smears and cultures should be employed in addition to the clinical examination for the diagnosis of gonococcal infection in the female. Cultures should also be performed in all cases of "chronic" gonorrhea in the male, since it has been shown that Neisseria other than the gonococcus and many other types of organisms will be found in these cases. In cases of acute gonorrhea in the male cultures are also recommended, not only for the positive identification of the gonococcus, but for the detection of mixed infections which are a prominent factor in the causation of postgonorrheal urethritis. In those clinics where routine cultures in acute cases in the male are not feasible, the accuracy of smears for diagnosis can be improved by the careful evaluation of staining methods through the occasional checking of smear results against culture methods.

Smear diagnosis can be improved also by the careful evaluation of staining methods. A proper smear should be made by the "rolled out" method avoiding a preparation that is too thick. Staining methods are very important. The time-honored simple methylene blue stain for a preliminary examination of the morphology of the gonococci still pays dividends in improved accuracy. The best control for Gram's staining reaction is the procedure recommended many years ago of placing a loopful of a young culture of Staphylococcus aureus and one of Escherichia coli on the slide before staining. This procedure is not necessary for every slide every day, but this control should be used at least once each day to determine the state of stains, Lugol's solution, and decolorizing agents. Careful attention should be paid to overdecolorization which will make Gram-positive cocci appear to be Gram-negative. Hucker's modification of Gram's stain usually gives the best results.

Choice of Culture Media for the Isolation of the Gonococcus—The most complete study of the relative efficiency of media is that of Carpenter [11] and his 12 collaborators who reported on the evaluation of 12 media for the isolation of the gonococcus (1949). In this study it was shown that three media were equally efficient in isolating the highest number of cases positive for the gonococcus. They were: (1) modified McLeod's agar with Nile blue A and enriched with horse plasma and hemoglobin; (2) G. C. agar base, experimental, with bacto-hemoglobin and supplement B; and (3) proteose No. 3 agar with Nile blue A and enriched with horse plasma and hemoglobin. Of these three media, these investigators cite as the advantages of the second medium G. C. agar base: (1) simplicity of preparation because it is a dehydrated medium; and (2) the cultures may be examined after incubation for 24 hours. In most public health laboratories, particularly in the smaller unit, a uniformly prepared dehydrated medium is more

economical to prepare and can be more dependably made with a less well trained technician.

In laboratories where routine cultures are performed there exists a wide difference of opinion as to the necessity for complete identification of Neisserian strains by means of the sugar fermentation reactions. The ideal situation for the clinican is to identify all strains by the sugar reactions. This is becoming increasingly important with the apparent increase in the incidence of nongonococcal infections in which various strains of Neisseria, other than the gonococcus are found. Wax,[12] who studied 442 pure cultures of oxidase-positive colonies consisting of Gram-negative diplococci isolated from previously diagnosed male and female gonorrhea patients treated with penicillin, found that 359 fermented glucose only and met the criteria for the gonococcus; 83 cultures produced reactions in other sugars and were identified as other Neisseria. Some experienced bacteriologists state that they can differentiate gonococcal from oxidase-positive nongonococcal strains by gross morphology and do not routinely use sugar fermentations. A few technicians are of the opinion that the demonstration of oxidase-positive colonies always means the presence of the gonococcus which is erroneous. One large public health laboratory employs only dextrose and maltose for the sugar fermentation reactions.

Conclusions

The adoption of uniform methods for the diagnosis of gonococcal infections is essential for the control of this venereal disease. In reporting cases of gonococcal infection the method used in making the diagnosis should be stated. This procedure would allow health officers to evaluate venereal disease statistics for planning purposes and to measure progress in the fight for eradication. Studies show wide variation in the diagnostic methods used and extreme variation in the proportion of cases diagnosed as gonococcal infection in various clinics.

The erroneous diagnosis of gonococcal infections makes the clinicians' task difficult in determining the type of treatment and criteria for cure. A false-positive diagnosis of gonorrhea results in the useless expenditure of time interviewing sex contacts by investigators and other health workers. A false-positive diagnosis may result in profound emotional changes in the patient and cause marital and family discord. Such a diagnosis may also involve medicolegal questions. On the other hand, false-negative diagnosis results in failure to treat or improper treatment, failure to employ epidemiologic study, and contributes further to the spread of the infection.

A plea is made for the general adoption of the standard laboratory technics published in the chapter on the Gonococcus in Diagnostic Procedures and Reagents, of the APHA. Adequate funds should be made available to staff all health department laboratories with technicians well trained in the performance of both smear and culture examinations. A check system should be initiated to determine the relative accuracy of both individual technicians and laboratories.

Laboratory requirements for the diagnosis of gonococcal infection can be stated: in the male the positive smear using a Gram stain can be considered presumptive evidence of gonorrhea; in the female, the smear alone, if negative, is essentially worthless as a diagnostic procedure. The definitive diagnosis in either male or female can be made only from culture studies which include positive identification by means of sugar fermentation. Culturing only to the extent of obtaining oxidase positive organ-

isms which morphologically are Gram-negative diplococci can be considered only as presumptive evidence.

With reference to the practicability and legality of acceptance by the health department of diagnosis of gonorrhea on a clinical basis, the following procedure is believed to be adequate: the clinical diagnosis in the male based upon the presence of a purulent urethral discharge, with dysuria, and with a history of recent contacts can be accepted as highly suggestive presumptive evidence; clinical diagnosis of gonorrhea in the female cannot be made with any degree of certainty and evidence which is considered by the physician as suggestive can be only a basis for his instituting the necessary culture studies. The legal basis for a clinical diagnosis of gonorrhea in either sex would appear to be questionable.

From the public health standpoint the epidemiologic treatment of female contacts of male gonorrhea cases is on safe ground. However, this procedure strengthens the plea for more accurate diagnosis in the male.

REFERENCES

1. Recommended Methods for the Laboratory Diagnosis of Gonococcal Infection. New York: American Public Health Association Year Book 1936-1937, p. 125.
2. Carpenter, Charles M. "The Gonococcus," in Diagnostic Procedures and Reagents (3rd ed.). New York: American Public Health Association, 1950, pp. 107-135.
3. Parrino, P. S. Non-Gonococcic Urethritis in the Male. U. S. Armed Forces M. J. 5:1249-1266 (Sept.), 1954.
4. Mahoney, J. F.; Van Slyke, C. J.; Wolcott, R. R.; Thayer, J. D.; and Nimelman, A. Culture Studies in Chronic Gonorrhea of Women. Am. J. Syph., Gonor. & Ven. Dis. 26:38, 1942.
5. Personal communication.
6. Hughes, R. P., and Carpenter, C. M. Alleged Penicillin-Resistant Gonorrhea. Am. J. Syph., Gonor. & Ven. Dis. 32:265, 1948.
7. Kieselbach, M. R. Is Gonorrhea Control a Public Health Function? Am. J. Syph., Gonor. & Ven. Dis. 33:90, 1949.
8. Personal communication.
9. Personal communication.
10. Personal communication.
11. Carpenter, Charles M., et al. Evaluation of Twelve Media for the Isolation of the Gonococcus. Am. J. Syph., Gonor. & Ven. Dis. 33:164, 1949.
12. Wax, L. Sugar Fermentations of Gram-Negative Diplococci Isolated from the Genitourinary Tract of Penicillin-Treated Gonorrhea Patients. J. Ven. Dis. Inform. 30:145, 1949.
13. Hundley, J. M.; Diehl, W. K.; and Bagott, J. W. Bacteriological Studies in Salpingitis with Special Reference to Gonococcal Viability. Am. J. Obst. & Gynec. 60:977, 1950.

Health Careers Guidebook

The first fruits of the National Health Council's "Health Careers Horizons" are off the press. The two publications are "Health Careers Guidebook" and "Partners for Health." The former gives health career briefings for 156 occupations related to health services, from accountants to zoologists, in addition to a general picture of the world of health careers. The latter reproduces this general picture in a shorter pamphlet. The two have been sent to every high school in the country with more widespread distribution planned at a later date for the briefer pamphlet. (See Books and Reports, p. 516.)

Diet and Nutritional Status of Iowa School Children

ERCEL S. EPPRIGHT, Ph.D., F.A.P.H.A., and CHARLOTTE RODERUCK, Ph.D.

Meat, potatoes, sweet desserts, table fats, cereals—with less than the recommended amounts of milk, fruits, and colored vegetables—form the hard core of the diets of a favored state's children whose nutriture was fairly satisfactory though perhaps somewhat below excellence. Teen-age and oversize girls were conspicuous for their poor diets. Some of the anomalies are discussed.

In Iowa an effort has been made to ascertain the nutrient intake of school children on a state-wide basis and to identify relationships of the diet to the nutritional status of the children. A state-wide sample of 61 schools was drawn from a universe consisting of most types of Iowa schools. Within the schools a random sample of approximately 1,200 children was chosen. Figure 1 and Table 1 show the distribution of the schools and of the children. Some of the results of this study have been reported.[1-4] Portions of the study relating to the 9-, 10-, and 11-year-old children were conducted cooperatively with the Ohio and Kansas Agricultural Experiment Stations.[5]

Under the supervision of a qualified dietitian seven-day dietary records were kept by the children or their mothers. Five body measurements were made of each child and samples of finger-prick blood were taken for the determination of hemoglobin. For approximately 700 children in cities and small towns, determinations were made of the serum concentrations of ascorbic acid, carotenoids, and alkaline phosphatase. Dental and medical examinations were made of approximately 300 children.*

Figure 1—Location of Schools in Sample

Nutritive Value of the Diets of Iowa School Children—Mean daily intakes of food energy and 10 nutrients were estimated from the seven-day dietary records for the Iowa school children at successive ages from six through 18. Except for calcium, boys at successive years generally had progressively larger mean daily intakes of food energy and the nutrients. The mean daily intakes for girls from six to 12 tended to be larger from year to year, although the trend was less regular than with boys. For girls beyond age 12, however, the mean intakes of all nutrients, except possibly ascorbic acid, remained about the same from year to year, or actually decreased. At age 12 the intake trends of girls changed markedly and at 16 mean in-

* Dental examinations were made by Dr. Kenneth Wessels from the State University of Iowa. We are indebted to the Iowa State Health Department for assistance which made possible the medical and dental examinations.

Table 1—Distribution of Iowa Children Studied by Age, Sex, and Place of Residence

	6–8 Years		9–11 Years		12–14 Years		15 Years and Over		
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Total
Rural *	58	57	66	76	61	58	55	65	496
Towns †	62	60	68	74	88	84	46	49	531
Cities ‡	27	24	29	32	26	23	0	0	161
Total	147	141	163	182	175	165	101	114	1,188

* Small communities with schools having grades 1–12
† Places less than 50,000 with separate elementary and high schools
‡ Places of 50,000 and more

takes were notably low. Figure 2 shows the mean values for calories, protein, calcium, and ascorbic acid. The intake trends in thiamine, niacin, riboflavin, and iron were strikingly similar to those observed for food energy and protein. For both sexes at each age the percentage distribution of the mean daily caloric value of the diets among protein, fat, and carbohydrate was approximately 12, 42, and 46 per cent, respectively.

The mean daily nutritive value of the diets of boys at most ages and of girls six to 12 approximated or exceeded the Recommended Dietary Allowances of the National Research Council (1953, revised). After age 12 girls tended to have diets below the Allowances in most nutrients.

Looking beyond the mean, one sees a fairly large proportion of children whose diets are not well fortified by certain nutrients. Forty per cent of the girls and 30 per cent of the boys had diets with one or more nutrients present in amounts less than 67 per cent of the Allowances. (Table 2 shows the frequency of diets in which mean daily intakes of specified nutrients were deficient by that amount.) Dietary inadequacies in calcium and ascorbic acid for all children and in iron for girls of 12 and older were by far the most frequent. Approximately half (45.6 per cent of the 114 girls of age 15 and older) had on the average less than 67 per cent of the Allowances in calcium. Among the Iowa school children, the teen-age girls were conspicuous for their poor diets. More than half had diets which would appear to be grossly inadequate. Although the nutrient intake of the Iowa school children might be described as reasonably good, dietary inadequacies in calcium and ascorbic acid were sufficiently frequent for both sexes and at all ages to merit attention in nutrition education programs. The inadequacies of the diets of the Iowa children stemmed from low consumption of milk and the vitamin-rich fruits and vegetables.

The authors are associated with the Food and Nutrition Department and the Agricultural Experiment Station of the Iowa State College, Ames, Iowa.

This paper was presented before a Joint Session of the American School Health Association and the Dental Health, Food and Nutrition, Maternal and Child Health, and School Health Sections of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 13, 1954.

Contribution No. 17, Subproject 2—"The Nutritional Status of School Children: The School Lunch as an Influencing Factor" of the North Central Region Cooperative Project NC-5, "Nutritional Status and Dietary Needs of Population Groups." (a) Human Nutrition Research Branch, Agricultural Research Service, Washington, D. C. (b) Iowa Agricultural Experiment Station, Ames, Iowa, as Journal Paper No. 2615, Project 1021.

Supported in part by a grant and other assistance from General Mills, Inc., as part of its nutrition education program.

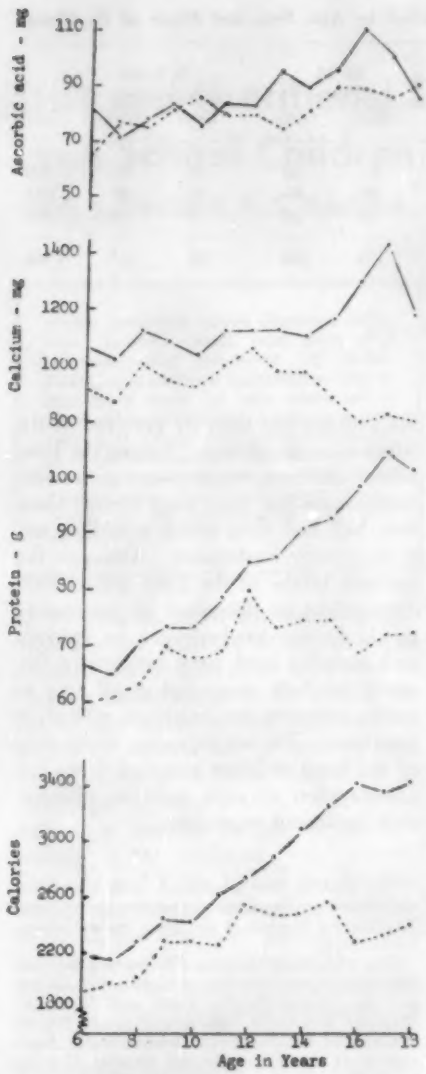


Figure 2—Mean Daily Nutritive Value of Diets of Iowa School Children

Boys ——
Girls .....

The use of mineral and vitamin supplements was reported for 16.5 per cent of the boys and 13.2 per cent of the girls of a subsample consisting of about 700 children. Few of the children using these supplements were to be found in the older age groups (2.2 per cent of the boys and 4.1 per cent of the girls age 15 and above as compared with 22.5 per cent of the boys and 19.3 per cent of the girls 6–8 years).

Body Measurements as Indexes of Nutritional Status—Figure 3 shows the mean heights and weights of the Iowa school children. Mean body measurements agreed closely with norms prepared from data collected on Iowa City children.* The Iowa school children, as a group, appeared to be growing satisfactorily according to currently accepted standards of physical fitness. Thus, in a general way the physical development of the children reflected the nutritive quality of the diets which might be described as reasonably good on the whole.

The analysis of body measurements in relation to the diets, however, did raise some questions of nutritional significance. There was some evidence from comparisons with previous mass studies in Iowa and with expected year-to-year increments, that the Iowa children today tend to be somewhat heavy for their height. In view of the current emphasis on weight control this tendency deserves careful scrutiny. The change in trend of nutrient intake of girls at 12 was evident in body measurements at 13, but after that age mean heights and weights, particularly for the girls, continued to be higher at successive years, although the intakes of nutrients remained the same or, in the case of calcium, actually decreased. This observation raises the practical question of the quality of growth during this stage and of the adequacy of stores for the forthcoming period of reproduction.

* Stuart, H. C., and Meredith, H. V. Use of Body Measurements in the School Health Program. Part II. Methods to Be Followed in Taking and Interpreting Measurements and Norms to Be Used. A.J.P.H. 36:1365–1438, 1946.

By most standards of comparison fewer girls than boys were to be found in the so-called normal range of body size. Among the boys about 10 per cent were very stocky or obese and 20 per cent were thin. Among the girls the corresponding percentages were about 17 and 19. Physique classification according to Wetzel's grid is shown in Table 3. For children after 12, relationships between nutrient intake and physical measurements seemed somewhat contradictory. Despite their apparently better nutrient intakes more of the boys than of the girls were classified as thin or underweight, and despite their low-calorie diets teen-age girls ranged highest in the percentage of overweight. Further analysis of the data focused attention sharply on the teen-age and the oversized girls as groups in which the intakes and physical development were markedly unrelated.

Even within the range of intakes observed in this study, differences were noted between the mean body measurements of children with the best and those with the poorest diets. The mean measurements at ages six through 15 of the 223 children with liberal intakes were compared with those of the 432 children whose diets were somewhat lacking in at least one nutrient. Diets classified as liberal conformed to the Allowances in every respect; those at the other extreme contained at least one nutrient in amounts less than 67 per cent of the Allowances and were on the average somewhat below the Allowances. The children with the liberal diets tended at most ages to be slightly taller, heavier, and larger in leg girth than the children at the other extreme. These differences as noted in a fairly well fed and homogeneous population suggest the sensitivity of mean body measurements as indexes of the nutritional status of groups of children.

This study revealed that few schools kept systematic records of height and weight of children. Because of the value of this information in ascertaining the nutritional status of children, schools

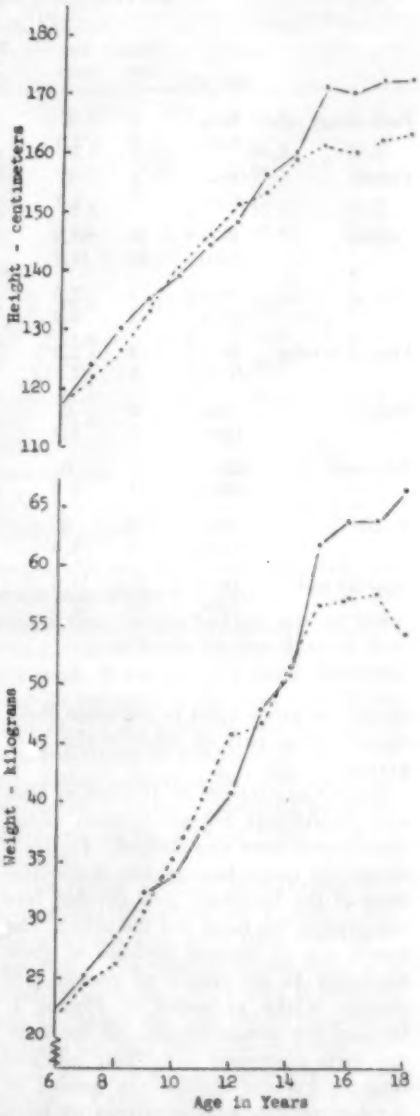


Figure 3—Mean Heights and Weights of Iowa School Children

Boys ———
Girls .....

Table 2—Distribution of Children with Food Energy Value and Nutrients in Average Daily Diets at Levels Less than 67 Per cent of NRC Recommended Allowances

		6–8 Year Olds		9–11 Year Olds		12–14 Year Olds		15 Years and Above	
		Number	Per cent	Number	Per cent	Number	Per cent	Number	Per cent
Food energy value	Boys	0	0	4	2.4	9	5.1	5	4.9
	Girls	3	2.1	8	4.4	7	4.2	5	4.3
Protein	Boys	0	0	4	2.4	3	1.7	2	1.9
	Girls	3	2.1	6	3.3	13	7.9	11	9.6
Calcium	Boys	16	10.9	24	14.7	52	29.7	21	20.7
	Girls	28	19.8	46	25.2	49	29.7	52	45.6
Iron	Boys	3	2.0	6	3.7	11	6.2	3	2.9
	Girls	7	4.9	11	6.0	27	16.3	36	31.5
Vitamin A value	Boys	3	2.0	11	6.8	12	6.8	5	4.9
	Girls	5	3.5	11	6.0	16	9.7	22	19.3
Thiamine	Boys	0	0	7	4.3	9	5.1	7	6.9
	Girls	2	1.4	11	6.0	14	8.4	14	12.2
Riboflavin	Boys	0	0	8	4.9	9	5.1	4	3.9
	Girls	4	2.8	11	6.0	18	10.9	15	13.1
Niacin	Boys	0	0	2	1.2	5	2.8	5	4.9
	Girls	2	1.4	4	2.2	6	3.6	8	7.0
Ascorbic acid	Boys	17	11.6	18	11.0	40	22.8	19	18.8
	Girls	17	12.1	19	10.4	33	20.0	26	22.8

should be encouraged to maintain these records as a part of their health programs.

Blood Constituents as Indexes of Diet and Nutritional Status—Certain blood constituents were also studied. Figure 4 shows the mean hemoglobin concentrations of the boys and girls divided into two groups, the rural and the urban. The trends are of interest because of their similarity to the trends of energy and protein intake as noted in Figure 1. Hemoglobin concentrations of the teenage girls plateaued with their nutrient intake. Further studies are needed of the hemoglobin concentrations of teenage girls known to be in excellent nutrition. Only 3 per cent of 578 girls had values below 11 gm./100 ml. of blood, and only 5 per cent of 583 boys had values which might be classified as low (i.e., below 11 gm. at ages less than 13; below 11.5 gm. at 13 and 14; or below 12 gm. at 14 years of age). For boys significant, but not high, correlations were noted between the hemoglobin concentrations and the mean daily intakes of protein, niacin, iron, and riboflavin. More important perhaps is the fact that the general level of hemoglobin was that which might be expected for children with diets predominantly good in protein, the B vitamins, and iron.

Only 30 per cent of the boys and 32 per cent of the girls had serum ascorbic acid concentrations of 1.00 mg., or more, per 100 ml. On the other hand, the serum ascorbic acid concentrations of 26

Table 3—Distribution of Iowa School Children According to Physique Channels *

Age	1 A_5–A_4 and Higher	2 A_3	3 A_2–M–B_2	4 B_3 and Below	Total All Channels	1 A_5–A_4 and Higher	2 A_3	3 A_2–M–B_2	4 B_3 and Below
	Number				Boys	Per cent			
All ages	65	46	364	118	593	10.9	7.7	61.4	19.9
6–11	31	25	198	60	314	9.9	7.7	63.1	19.1
12–18	34	21	166	58	279	12.2	7.5	59.5	20.7
12–14	22	8	100	44	174	12.6	4.6	57.6	25.2
15–18	12	13	66	14	105	11.4	12.4	62.8	13.3
					Girls				
All ages	101	72	317	111	601	16.6	12.0	52.7	18.5
6–11	39	34	182	70	325	12.0	10.4	56.0	21.5
12–18	62	38	135	41	276	22.5	13.8	48.9	14.7
12–14	31	16	82	34	163	19.0	9.8	50.3	20.8
15–18	31	22	53	7	113	27.4	19.4	46.9	6.2

* Wetzel's grid

1. Very heavy and obese
2. Stocky
3. Medium
4. Thin

per cent of the boys and 24 per cent of the girls were below 0.4 mg. The ascorbic acid nutrition of Iowa school children thus appeared to be less than optimum for a majority of children, and actually poor for approximately one-fourth. The calculated mean intakes of this nutrient may be misleading. Because of the unequal distribution of vitamin C in foods, distributions of the mean daily intake are skewed. Means were somewhat higher than the 50th percentiles, and one-fourth of the children had intakes of 60–65 mg., or less, without full adjustments for cooking losses. The children averaged daily 0.6 serving of vitamin C-rich fruits and vegetables. Fifty per cent of the children had one serving of this type of food in their diets three days or less a week. Furthermore, it was shown that the adequacy of the total diet in vitamin C varied with the inclusion of a C-rich food in the breakfast menu.

The diets of the Iowa children were conspicuously lacking in the carotene-rich fruits and vegetables; the daily average was about 0.4 serving. Fifty per cent of the children had one serving from this group of foods for two days or less per week. It was not surprising therefore that 23 per cent of the boys and 21 per cent of the girls had serum carotenoid concentrations of less than 75 mcg./100 ml. Other influences than diet, however, were evident in the concentrations of this substance in the sera of these growing children.

The serum alkaline phosphatase concentrations illustrated in Figure 5 followed trends that have been previously reported. The concentrations reached a peak in girls at age 11 and in boys at age 13. After the peak the mean concentrations for girls tended to be lower than those for boys and to reach adult levels earlier. Values above 8 Nitro Phenol Units were noted for only 5.3 per cent of 318 boys and 5.6 per cent of 319 girls. Analyses to date have failed to reveal any striking relationship between the alka-

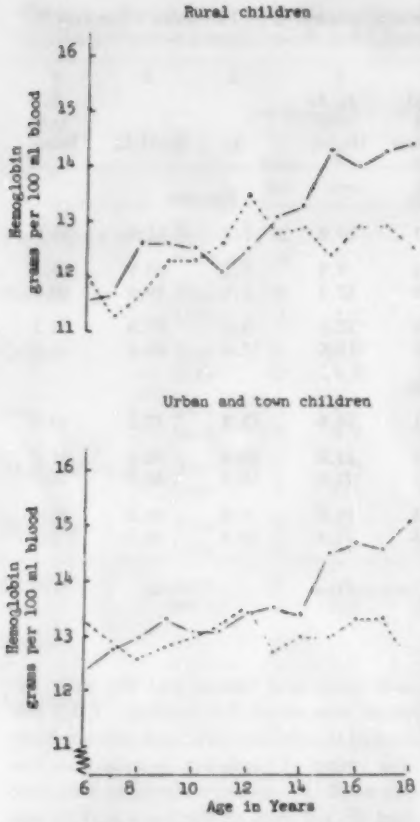


Figure 4—Mean Hemoglobin Concentrations of Iowa School Children

Boys ———
Girls .....

line phosphatase concentrations and the diets of the children. There was, however, some indication that for girls with liberal diets the peak was reached somewhat earlier than was the case with girls whose diets were deficient, and that the serum alkaline phosphatase concentrations descended to adult levels later for the poorly nourished than the well nourished girls. Since the principal difference in the diets of the two groups was in calcium, this observation may signify a difference in the calcium nutrition. A complete assessment of the nutrition of Iowa children requires further study of the immediate and long-time effects of shortages in nutrients related to calcification. Further studies are needed to show the benefits which might be derived through upgrading of the Iowa diets in the use of milk, the vitamin C-, and carotene-rich fruits and vegetables.

Clinical and Dental Findings—A nutritional appraisal of 273 children was made by physicians, using the form developed by the U. S. Public Health Service. Of children observed, 75 per cent rated good, 20 per cent fair, and 5 per cent poor. These examinations revealed almost a complete absence of the clinical symptoms of malnutrition.

On the other hand, there was a widespread prevalence of poor teeth. Only five of approximately 300 children were without decayed and filled tooth surfaces. Girls averaged 15.7 and boys 16.6 decayed and filled tooth surfaces. This was indeed the most conspicuous physical defect in the children. The bearing of the nutrition of the children on the condition of the teeth should be investigated. Thus far for the Iowa children, no dietary relationships to the dental condition have been discerned, except that the predominating weakness of the diet was in the nutrients related to calcification.

Summary

The Iowa study is unique in its statewide aspects, the results being representative of most segments of the public school children of the state. The core of the diets of the Iowa children, like that of their elders, consisted of liberal amounts of meat, potatoes, sweet desserts, table fat, and bread and other cereal foods. The mean daily consumption of milk was between two and three cups depending on the age-sex group. Consequently, the mean daily intake of calcium was somewhat low. Many children used little of the vitamin C- and

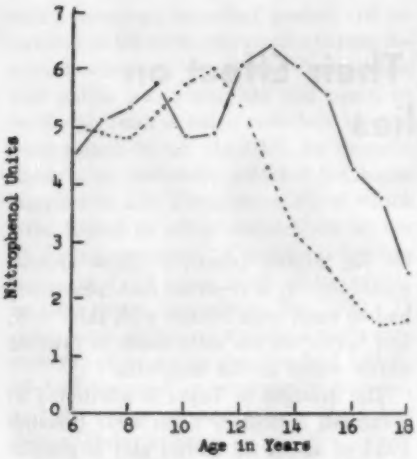


Figure 5—Mean Serum Alkaline Phosphatase Concentrations

Boys ———
Girls .....

carotene-rich fruits and vegetables; hence many had diets somewhat low in vitamin C and in vitamin A value. Mean intakes of these substances may give a false sense of security. Some evidences of these dietary conditions were to be found in the blood.

Physical measurements and hemoglobin concentrations of the blood indicated a fairly satisfactory state of nutrition. Even in this population, however, perceptible differences in physical development were evident between the groups of children at the two extremes of nutrient intake. Although the studies in Iowa have failed to reveal any dramatic findings, they have yielded some examples of fundamental relationships between diet, nutrient consumption, and nutritional status on a group basis. The teen-age girls constitute an exceptional group whose nutrition and physical development seemed anomalous. Oversize girls were conspicuous for their poor diets; for them, body size was unrelated to their apparent intake of most nutrients. With the Iowa school children the principal health problems with nutritional implications presently apparent are dental caries for all children and weight control, particularly for the teen-age girls.

It might be permissible to speculate that if Iowa children had only slight improvements in their diets they might become shining examples of good nutrition and might be insured against many of the ailments that beset our middle-age population.

REFERENCES

1. Sidwell, V. D., and Eppright, E. S. Food Habits of Iowa Children—Breakfast. J. Home Economics 45:401-405, 1953.
2. Eppright, E. S., and Sidwell, V. D. Nutritive Value of the Diets of Iowa School Children. J. Nutrition 54:371-388, 1954.
3. ———. Physical Measurements of Iowa School Children. J. Nutrition 54:543-556, 1954.
4. Eppright, E. S.; Roderuck, C.; Sidwell, V. D.; and Swanson, P. P. Relationship of Nutrient Intakes of Iowa School Children to Physical and Biochemical Measurements. J. Nutrition 54:557-570, 1954.
5. Patton, M. B., et al. Working Together for a Better Understanding of the Nutrition of School Children. J. Home Economics 45:161-164, 1953.

Isoniazid Study Planned

A cooperative study is planned with the participation of 19 pediatric centers throughout the United States to test isoniazid as a prophylactic agent against tuberculous meningitis in children with first infection tuberculosis. The study will be financed jointly by the National Institutes of Health and the National Tuberculosis Association. The objective is to treat 1,000 children—90 per cent of them under age five—for one year after primary infection is discovered. Carroll E. Palmer, M.D., will be in charge of the study.

Drought Problems and Their Effect on Municipal Water Supplies

CLAYTON H. BILLINGS, S.M.

Fortunate, indeed, is the region that has no pressing water supply problem. Man-made deficiencies, as well as prolonged drought, can create emergencies that test the mettle of both water supply and public health officials, so this free-running account of the tremendous difficulties besetting a naturally dry region has implications for many another section of our country.

In 1952 the Texas State Department of Health received a novel excuse from a waterworks operator who was late in making application for renewal of his certificate of competency. He said that his lake had been out of water for the past four months and he did not think it necessary to renew it under those circumstances. He probably saw a cloud and finally decided to submit his application.

Just this month the department received plans for construction of water and sewerage systems on a 550-acre section of a prairie. Bonds in the amount of $1,200,000 were authorized for issue by the three eligible voters. They found a source of water, so they decided to start a town.

The city of Laredo, Tex., actually was completely out of water for two and a half days in July, 1953. According to a report [1] backsiphonage did occur in two-story buildings, from upstairs toilets to downstairs sinks. Air conditioning and refrigeration units dependent upon water could not be used. In the hotels the bell boys were plagued with requests for pitchers of water for flushing commodes. Diminished flow in sewers was responsible for highly offensive odors around manholes. It is reported that creameries had to wash milk bottles with skim milk and heroic efforts were made to provide sterile water at the hospitals.

The drought in Texas is attributed to a rainfall deficiency from 1947 through 1953 of about 22 inches and is considered one of the worst in the state's weather history. The deficiency amounts to about three-fourths of the average total rainfall in one year. Surface runoff was gradually retarded during this period and in 1952 all streams in the state, with the exception of the Red and Sabine Rivers, stopped flowing.[2] To keep the Gulf out temporary dams were erected at the mouths of the Angelina-Neches and the Trinity Rivers. Ground water reserves, which are the sources of two-thirds of the water consumed for domestic purposes and half of that used for all purposes, were seriously lowered. In the Gulf Coast Plain, where heavy drafts are made for industry, the water table dropped 10 feet per year.[3] In the High Plains, where the cities and farms are completely dependent upon ground water, not only have elevations been seriously lowered, but the rate of pumping is 30–50 times as great as the estimated rate of recharge.[4] This area is the southern extension of the Great Plains of the Midwest.

The shortage of water for domestic use became evident in 1950 and reached a peak in 1953. Rains during the 1953–1954 winter alleviated the seriousness of the condition and last summer water hauling for public water supplies was unnecessary. In certain areas of the

state, however, extended periods of no rainfall in the summer months forced the abandonment of numerous farm wells, and public water supplies will again be in danger unless rains sufficient to produce runoff occur. In 1951 the drought directly or indirectly affected the water supplies of 274 Texas cities, 63 of which were forced to adopt restrictions on use by their consumers. Conditions became worse in 1952 when three water supply failures were reported. By 1953, 77 cities were rationing water to their consumers; eight water supplies had failed; 28 had resorted to emergency sources; and 40 using surface sources had less than a 90-day reserve.

In that same year shortages were occurring throughout the nation. A report issued by the Water Resources Review [5] showed that on the basis of number of persons experiencing shortage (subject to rationing) the Texas problem was third in severity among the states. On the basis of number of persons served by public water supply systems that experienced shortage due to drought alone, Texas had the second most severe condition. This same report lists population growth or unusual seasonal fluctuation in use as principal reason for shortage, nation-wide, and shortage of raw water source as the principal type. However, 24 per cent of the reported shortages were inherent in distribution or treatment facilities. Most shortages due to supply occurred among small cities, less than 10,000 in population, but shortages due to treatment facilities were highest among the larger cities.

In the more severe cases municipal water rationing consisted of prohibiting all outside uses of water, including lawn irrigation, car washing, and driveway washing. Where conditions were less serious, attempts were made to equalize rate of usage by specifying the days of the week on which certain houses or certain consumers would be permitted to irrigate lawns. Others utilized the procedure of naming the hour of the day at which lawn irrigation could be practiced. In most cases, the rationing was effected by city ordinance. The city of Fort Worth has prepared, ready for adoption by the City Council, five ordinances of varying degrees of severity which were to be enacted if conditions warranted. Several cities in the central part of the state adopted a penalty rate wherein the consumer was charged for excessive water consumption.

In Terrell in 1952 the average daily water consumption before the adoption of an ordinance prohibiting all outside uses of water was 1.3 mgd. Immediately after the ordinance became effective, the water consumption was reduced to 0.8 mgd. At Brownsville a 6–7 mgd. daily consumption was reduced to 1.8 mgd. by reducing the distribution system pressure from 60 to 40 psi and prohibiting all outside uses.

Converting to less desirable sources of supply was a widespread practice. In the Lower Rio Grande River Valley, which had depended almost entirely upon the Rio Grande River, some cities resorted to the use of ground water heretofore considered unacceptable in quality or insufficient in production. Well construction for individual use was undertaken as rapidly as well drillers could handle requests, since ground water was found to be quite shallow. In the city of Harlingen a number of wells for individual use were constructed to a depth of only 30 feet. Bacteriologic analyses revealed that a high percentage of the wells produced water of acceptable quality. This is attributed to the city's having prohibited for a number of years the construction of privies, cesspools, or septic tanks within the city limits.

Mr. Billings is senior engineer, State Department of Health, Austin, Tex.

This paper was presented before the Engineering Section of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 12, 1954.

The situation became extremely critical in the Lower Rio Grande Valley in 1953 when the normal flow in the Rio Grande gradually diminished and ceased entirely. This is an area that is normally extensively irrigated and produces huge quantities of fruits, vegetables, and cotton. The competition between the cities and the farmers for water was severe. The problem finally had to be settled by injunction obtained by the cities prohibiting all irrigation and other uses except those essential for domestic needs. A "master" was appointed by the court to enforce the edict. Even this measure failed to provide sufficient quantities of water for domestic consumption and the Government of Mexico was appealed to for the release of water from the Marte Gomez Reservoir. Mexico agreed to permit the diversion of 500 cfs on the condition that none would be used for irrigation.

The valley area contains numerous small bodies of water called resacas. These normally trap irrigation overflow and some drainage and are quite often subject to extensive evaporation without replenishment. But upon investigation it was found that the quality of the water in the resacas, at that time at least, compared favorably with other sources. For example, one that Brownsville was interested in using was found to have a chloride concentration of 350 ppm as compared with that found in the Rio Grande of 750. A few of the cities utilized these sources.

Numerous surface sources had to be abandoned in favor of well supplies throughout the state. Conversion sometimes had its surprises. Temple, using water from the Leon River, established rigid restrictions on consumer use and drilled wells to a very deep formation of rather uncertain yield. Plans were also made to commence hauling water from nearby sources. Before it became necessary to institute the hauling procedure, the wells were completed. Fortunately, the outcome was that the city was able to continue its fluoridation program which had been started the year before without using any chemicals. The well water had a fluoride concentration supply of more than the allowable limit of 1.5, and by controlled dilution with surface water, the optimum of 1.0 was maintained.

In parts of West Texas legal action was instituted by cities to stop irrigation with ground water in order that domestic water supplies that depended on the same aquifer would not be endangered.

The city of Olney, which suffers from oil wells on its watershed, found a good use for the brines that had heretofore plagued it as a problem. The salt water was pumped into the distribution system for sanitation purposes and the city hauled water for drinking from another source.

Water hauling in Texas by railroad tank cars was first initiated in September, 1947, when the lake source of supply for the city of Coleman became very nearly dry. The city officials were in a somewhat difficult position because approval of the construction of a rather large reservoir within reach of the city was pending before Congress at the time. Consequently, rather than seeking an additional source and spending funds on its development, the officials decided in favor of hauling water from Brownwood, a city 29 miles distant.[6] The unloading facilities at Coleman were constructed so that 10 cars might be empted at a time. Flexible connections were prepared to connect to the bottom of the tank cars through 3-inch quick opening valves. These connections discharged to a common header to which were connected two 600 gallons per minute pumps. The water was rechlorinated at the pumps before being discharged into the city distribution system. It was planned to haul 40 cars or two train loads per day. The loading facilities at Brownwood consisted of swinging cranes constructed so

that 20 cars could be loaded at the same time from an 8-inch line carrying 80 psi pressure directly from the Brownwood water distribution system. The rate charged by the railroad for transportation was $10 per car of 10,000 gallons. The city increased its water rates in order to be compensated for the additional cost of raw water and, of course, continued restrictions on outside uses.

The city officials requested the State Department of Health to supervise the preparation of the cars for the hauling operation. The tank cars selected had been used for diverse purposes, many of them for hauling high octane aviation gasoline. The lead hazard became apparent. Since time would not permit use of an established laboratory for lead determinations following cleaning procedures, it was decided to devise a quick field test. This was done by Knudson and Mahlie [7] of Fort Worth. The procedure consisted of filling a Nessler tube with distilled water, two with the water to be tested, another with lead nitrate standard solution in the concentration of 1 ppm, and a fifth containing 1/10 ppm. One ml. of sodium sulfide was added to each. After the tubes were shaken briefly and reaction time allowed, the depth of color was compared against a white background.

The cleaning procedures varied somewhat with the type of cargo previously carried by the car in question. For those containing gasoline and not seriously deteriorated, it amounted to steam treatment for 16 hours at 110 pounds pressure followed by thorough scrubbing of the interiors using a solution of calcium hypochlorite and brooms and brushes. After the tank was thoroughly washed, the last wash water was allowed to stand in the tank for a period of time. Samples were then taken for lead determination. If lead was absent, the car was released. However, check samples from each batch of wash water were forwarded to the state laboratory. For those cars that had been hauling crude oil, the steam treatment period was increased to 32 hours, but without success. The substitute procedure consisted of filling the car with kerosene and allowing it to stand over night. This permitted sufficient solution of petroleum residues so that steaming would be successful. Coleman used railroad tank car hauling to supplement its supply of surface water for a period of more than two years. During this period a total of 75 cars were prepared by the railroad. The methods were later applied to other cities in the state after water hauling became necessary.

When it was realized in September, 1952, that its primary source of water, Lake Dallas on the Elm fork of the Trinity River, had become rather severely silted, the city of Dallas had to consider all possible supplementary sources. The relatively highly mineralized Red River, some 60 miles to the north, was considered the only dependable supplementary source of any magnitude and time was required to construct the necessary facilities to tap this source. An old water treatment plant on White Rock Lake was placed into operation and the maximum number of wells permitted by production from local aquifers were drilled. The total quantity of water available in Lake Dallas, at White Rock Lake, and the wells was found to be less than the very minimum needed by the city. The city officials then turned rather hesitantly toward the only remaining likely source, the West Fork of the Trinity River which flowed through the city but was used as a waste-way for the sewage plant effluents of the cities of Fort Worth, Arlington, Grand Prairie, and Irving, all within a distance of 40 miles. (The area likewise had its industrial waste problems.) Under drought conditions, it was quite obvious that the content of the river would be only these effluents. Surveys by public health officials instituted a

program aimed at correction of all defects in sewage plant operation in the interest of securing the maximum efficiency of operation. Samples were collected to ascertain whether the most probable number values of coliform organisms would permit use of the water by the time it had reached Dallas.

The plan included construction of an oxidation pond with arrangements for chlorination or other pretreatment before pumping the oxidation pond effluent to the city water treatment plant. Adverse public opinion finally forced the council to abandon this plan. Fortunately, other sources have proved adequate under restricted use.

The publicity given to the general water problem has diverted public attention into proper channels. Consideration is being given to developing water resources on a regional basis, never before undertaken in Texas. Several multicity water districts have been organized and at least one has been put in operation. One such plan contemplates development of the Canadian River in the High Plains Area to furnish water to 11 cities, some of them a hundred miles distant.

At the request of Senator Lyndon B. Johnson, the Bureau of Reclamation prepared a report [8] in which the potential water development of the state was explained. One of the features of the report is a proposal that the Texas rivers, the Sabine, Angelina-Neches, Trinity, Brazos, Colorado, and Nueces be connected by a canal system just above their respective points of discharge into the Gulf. The canal, supplemented by the construction of impoundments for the trapping of unused runoff and flood flows, would make available sufficient water for all foreseeable needs of the entire coastal area, including the Lower Rio Grande River Valley. Consideration is even being given to diversion of the Mississippi and Missouri Rivers.

Texas A. & M. College established the Water Research and Information Center with which it is hoped to compile and concentrate all available information on water resources for use by persons concerned with water supply development at the present time and for the education of future generations. A water resources committee has been established by the Legislature which is to recommend a water policy to the governor and the Legislature for future guidance. In the High Plains Area a conservation district has been formed, aimed at maintaining static ground water levels and arranging artificial replenishment if possible. Recharge of ground water formations is being attempted in other areas of the state. Demineralization of water from the Gulf has not been given serious consideration as yet. Investigation of this method, however, certainly should be undertaken.

Other fields for action not only in Texas but in all cities concerned with shortage, real or potential, are administrative. Jordan [9] is responsible for the statement: "Any properly designed and operated water supply system can pay its way and expand itself in step with community growth. It is a fallacy to proceed on the principle that a community's water supply system cannot be funded from the revenues paid by the water users. Rather bluntly it may be said that any sizable community that cannot afford to build a water works system and pay for it is so uneconomically located as to justify the relocation of its citizens in some other place."

The survey conducted by the Water Resources Review cited above indicated that a type of shortage experienced by American cities in considerable magnitude relates to treatment and distribution facilities. It also pointed out that the principal reason for shortage in 1953 was the fact that the demands created by population growth and heavy seasonal usage outstripped the sources of supply. It appears obvious that the shortage to

a large extent is then man-made or at least more easily controlled than attempting to make it rain. Jordan's statement considered in the light of these facts hits at a sore point in waterworks administration, the diversion of funds derived from water revenues to other governmental functions.

In 1931 at a meeting of the American Public Health Association, Tisdale [10] presented a paper with a title almost identical to this one. A study of the drought at that time included some observations on disease transmission. While it is likely that the potentiality existed during the current drought, the morbidity reports indicate that sanitation did not suffer to the extent of being responsible for disease. He stated that stream pollution problems were aggravated. During the current drought in Texas, this does not appear to be a very evident manifestation. In fact, in some installations which utilize oxidation ponds for treatment of sewage, the plants were unable to discharge any effluent because of the high rate of evaporation. Tisdale pointed out that "the aggregate and final effect of the 1930 drought on public health would probably be beneficial. The general public had received a dramatic portrayal of the worth of safe, potable, adequate public water supplies." There is no doubt but that those words still apply and this disaster will undoubtedly have its beneficial effects in a greater availability of water of a higher quality.

REFERENCES

1. Ehlers, V. M. Trip Report, July, 1953. (Unpublished.)
2. Rollins, A. P. Need for Water Resources Conservation in Texas. J. Am. Water Works A. 46:418 (May), 1954.
3. The Physical and Economic Foundation of Natural Resources. III Ground Water Regions of the United States—Their Storage Facilities. Interior and Insular Affairs Committee, House of Representatives, United States Congress, 1952, p. 68.
4. Ibid. p. 42.
5. MacKichan, K. A., and J. B. Graham. Public Water Supply Shortages, 1953. Water Resources Rev., Supp. 3, 1954.
6. Weiss, R. H. Report, Coleman Water Supply. September 6, 1957. (Unpublished.)
7. Knudson, D. B. Necessity Becomes the Mother of Invention, 1947. (Unpublished.)
8. Water Supply and the Texas Economy. Department of the Interior, Bureau of Reclamation. Document No. 37, 83rd Congress, 1st Session, 1953.
9. Jordan, Harry E. Local and Regional Water Supply Management. J. Am. Water Works A. 43:441 (June), 1951.
10. Tisdale, E. S. The 1930-1931 Drought and Its Effect Upon Public Water Supply. A.J.P.H. 21:1203 (Nov.), 1931.

Kimble Award Nominations Invited

Nominations are now being accepted for the 1955 Kimble Methodology Research Award administered by the Conference of State and Provincial Public Health Laboratory Directors and supported by the Kimble Glassware Division of Owens-Illinois Company. The award, consisting of a plaque and $500, is presented annually during the annual meeting of the American Public Health Association.

To be considered for nomination the candidate's work must be a fundamental contribution that serves as a base line for the development of diagnostic methods related to a public health laboratory or be an adaptation of a fundamental contribution. The work must have been completed since January 1, 1950, and the candidates must be citizens of either Canada or the United States and its territories. Deadline for 1955 nominations is May 30, but nominations received after that date will be considered for 1956.

Further information from Dr. Morris Scherago, Department of Bacteriology, University of Kentucky, Lexington, Ky.

Present Status of Our Knowledge of DDT Intoxication

WAYLAND J. HAYES, JR., M.D., Ph.D.

Baseless rumors of the hidden dangers of DDT—which are on a par with stories of the baneful effects of the use of aluminum cooking utensils—are obviously difficult to combat convincingly. The truth about the chance of DDT poisoning is here—it may prove helpful in answering inquiries.

The properties of DDT have been under investigation since 1939 and in this country since 1942. The compound has been in general use in this country since 1946 and previously was the subject of extensive military experience. The reasons for the continued interest in the toxicology and pharmacology of the compound lie in the fact that a greater tonnage of it is produced than any other insecticide, that it occurs as residues in food, and that it is stored in human tissue. Compared with other chlorinated hydrocarbon insecticides DDT is especially favorable for investigation, because more is already known about it and because the methods for its chemical analysis are advanced. Within limits, evaluation of related materials is bound to be influenced by what is known of DDT.

It is the purpose of this paper to review the outstanding features of our knowledge of the effect of DDT on man. Only the more important references will be given, because a far more comprehensive review should soon be available.[24]

Uncomplicated, acute DDT poisoning in man is a well described clinical entity.[19, 27, 29, 34, 39, 41, 53, 54] The onset depends on the dose; it may be as little as 30 minutes (after a dose of 20 gm.), but is usually two to three hours and may be longer. It is characterized by paresthesia of the tongue, lip, and part of the face. In more severe poisoning the paresthesia may also be detected in the extremities. The patient soon suffers from a sense of apprehension, a disturbance of equilibrium, dizziness, confusion, and—most characteristic—tremor. In severe poisoning convulsions may intervene and there may be paresis of the hands. General symptoms include malaise, headache, and fatigue. Very large doses are followed promptly by vomiting. Delayed vomiting or diarrhea, or both, may also follow. Careful medical examination during the period of severe symptoms indicates that the pupils are dilated. Except in severe poisoning the pupils react normally to light and accommodation and the eyes show no nystagmus. Sensitivity to touch and pain are exaggerated in the areas in which the patient feels paresthesia, and proprioception and vibratory sensation may be lost in the fingers and toes, but not in the more proximal joints. Tests to demonstrate coordination are performed poorly, but reflexes are normal except when the dosage has been very large. There is a slight tendency to leukocytosis without a constant deviation in the differential count, representing a nonspecific defense mechanism. A slight decrease in hemoglobin may be seen. The pulse may be quickened in mild poisoning, but irregular or abnormally slowed (45–60/min.), or both, in severe poisoning. Blood pressure, tem-

perature, sedimentation rate, and urine remain essentially normal.

Except in the most serious cases recovery has always been well advanced or complete in 24 hours. Three persons who were estimated to have eaten 20 gm. of DDT each still showed a residual weakness of the hands after five weeks. There is no well described case of fatal, uncomplicated DDT poisoning. In one instance death followed the taking of an unstated amount of DDT powder with suicidal intent,[14] but the possible involvement of other poisons was not excluded.

In addition to the clear-cut picture of poisoning already described, there are records of dermatitis,[25, 26, 32, 35, 45, 52] purpura,[12, 30] agranulocytosis,[57] and other conditions[14, 56] representing hypersensitivity. In the few cases that have been described, the patient's exposure was not great, and in no single instance was there completely convincing evidence that the disease was in fact caused by exposure to DDT or even exposure to the formulation in which the DDT was used. This does not deny that DDT seemed to be the most likely cause in some of the reported cases. Because for nearly every known material a few people may be found who are hypersensitive, it would be unreasonable to suppose that a few people are not hypersensitive to DDT. The important fact is that the total number of reported cases is very small, particularly when one considers the tremendous amount of the compound which has been used.

The greater proportion of dermatitis cases associated with DDT have been thought to be associated with a direct action of the compound on the skin. However, even some cases of dermatitis, like other forms of hypersensitivity, have been thought to be associated with absorbed DDT. The route of exposure in these cases has generally been in doubt. It is well established from animal experiments that oily solutions of DDT are absorbed from the skin and it is also known that particles of appropriate size may enter the lung and there be absorbed. The fact remains that the well established syndrome of systemic poisoning in man has never been reported following dermal or respiratory exposure. This is true, although many persons either under the conditions of experiments, or under conditions of actual use, have received very extensive dermal[10, 13, 15, 58] and respiratory[16, 43] exposure.

Dermatitis resulting from direct exposure to kerosene and other insecticide solvents is a well recognized condition. A number of deaths have been reported following the ingestion of DDT solutions. In these instances the clinical picture has frequently been characteristic of solvent poisoning. It is apparent from animal experiments that solvents, particularly animal and vegetable oils which are digestible, enhance the toxicity of large doses of DDT. Indigestible oils may even reduce the toxicity of DDT by preventing its absorption and by their laxative action. Kerosene, which is the most common solvent for DDT, has a considerable toxicity for man,[9, 33, 46] a fact which is apparently not fully appreciated by many people. It is obvious that it is very dangerous to drink DDT solutions, but it is not possible to learn very much about the toxicity of the compound as such from a study of cases involving this kind of exposure.

No instance of chronic DDT poisoning in man has been confirmed. This is probably to be expected from what is known of poisoning in animals. Animals

---

Dr. Hayes is chief, Toxicology Section, Technology Branch, Communicable Disease Center, Public Health Service, U. S. Department of Health, Education, and Welfare, Savannah, Ga.

This paper was presented before a Joint Session of the Engineering, Epidemiology, Food and Nutrition, and Industrial Hygiene Sections of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 14, 1954.

may be poisoned by moderate repeated doses of DDT, but the illness which they develop is strikingly similar to the illness which they show following a single massive dose of the compound. If dosage is continued, then the illness may be continued but, strangely enough, signs of poisoning may diminish or disappear altogether, even in the face of continued dosage. Animals appear to develop a slight but detectable tolerance. Furthermore, in view of what is known of storage, one is forced to conclude that illness related to the compound is never detectable in animals which do not at the time contain DDT. This relationship is also true of the morphological changes which have been demonstrated in the tissues and particularly the liver. Therefore, the question may be raised whether chronic poisoning has ever been demonstrated in animals. It is more nearly accurate to say that animals may continue to show illness during continued heavy exposure.

Needless to say, the repeated suggestion that DDT is the direct cause of a virus-like disease and of a psychoneurotic syndrome and is a contributing cause of poliomyelitis, hepatitis, cardiovascular disease, and cancer,[3-8, 37, 38, 49] as well as of a formidable array of animal diseases, finds no support in animal experiments or in human morbidity or mortality statistics. Fowler's study [18] in a community where suggestions of this sort had been championed failed to find any substantiating evidence, although case reports had been actively solicited from local physicians and others. Fowler did, of course, find instances of insecticide poisoning based on excessive and generally very careless occupational exposure.

The oral dosage of DDT necessary to produce illness in man has become rather accurately known. A single ingestion of 10 mg./kg. produces illness in some [27, 53] but not all [27, 44] subjects, even though no vomiting occurs. Smaller dosages generally produce no illness, although a dosage of 6 mg./kg. produced perspiration, headache, and nausea in a man who was already sickly and who was hungry at the time of eating the compound.[27] Those who have shown illness following ingestion of 10 mg./kg. have not had convulsions, but convulsions have frequently occurred when the dosage level was 16 or greater.[27] Dosages at least as high as 285 mg./kg. have been taken without fatal result.[19] However, these and even smaller dosage levels lead to prompt vomiting, so that the amount actually retained cannot be accurately determined.

The least dosage which, when repeated daily, will lead to illness in man is not known. Experiments with the most susceptible animals would lead one to expect that some individuals might show mild illness at a dosage ranging from 2.5 to 5 mg./kg./day. Although dogs withstand 10 mg./kg./day for years without any adverse effect, the fact that some human subjects are made ill by a single dose at this rate shows that man is more susceptible to DDT than the dog. It is known, as the result of an experiment now under way with human volunteers, that dosages as high as 0.5 mg./kg./day may be taken daily for several months without producing any adverse effect which the subject can detect, or which can be discovered by physical or laboratory examination. It is interesting to observe that this dosage is greater than the dosage obtained by rats whose total diet contains DDT at a concentration of 5 ppm. On such a diet adult male and female rats receive an average dosage of 0.22 and 0.26 mg./kg./day, respectively.

No quantitative estimate can be given of the dermal toxicity of DDT to man but, as already noted, dermal exposure under conditions of actual use has not been sufficient to produce systemic poisoning. In most instances authors have

found that the dermal LD_{50} of dissolved DDT is somewhat greater than the oral LD_{50} of the dissolved compound for a number of species. There is complete agreement that the dermal LD_{50} of undissolved DDT is extremely high (400,000 mg./kg., or greater), and many authors have found it impossible to determine the LD_{50} under these conditions because the material was simply not toxic enough.

In a fatal case alleged to represent uncomplicated DDT poisoning, autopsy revealed moderate congestion of the lungs and severe congestion of the gastric mucosa in the region of the cardiac antrum. Animals killed by a single large dose frequently show generalized congestion, foci of hemorrhage, or pulmonary edema associated with violent convulsions or the agonal state. Animals which survive long enough to develop changes may show small areas of necrosis in the liver and, to a lesser extent, in other organs. Repeated dosages which fail to produce illness do not generally produce any change in the tissues. Relatively large repeated doses tend to produce the same tissue changes as a single large dose in most species of animals and, in fact, with the repeated doses the changes occur more regularly and tend to be more pronounced because the animals survive long enough for the lesions to mature.

Much has been made of the changes in the liver of rats maintained on diets containing as little as 5 ppm of DDT. A very complete reinvestigation of the subject by Ortega of this laboratory makes it impossible to agree with Cameron and Cheng [11] that the changes are not real but represent artifacts. The changes are very real and not only can be demonstrated by careful histological methods, but also can be observed with the phase microscope in living liver cells. Although the reality of the changes in the liver of rats maintained on relatively small doses of DDT can no longer be questioned, the significance of the changes remains a matter of considerable doubt. In the first place, these changes are considered not to be a stage in the development of the necrosis caused by larger doses, but to be an unrelated phenomenon. The minor changes under discussion are reversible. They are restricted to rodents and are especially characteristic of rats. Even in rats they do not correlate well with toxicity, for they are much more prominent in the male, whereas the female is slightly more susceptible to DDT poisoning and stores far more of the compound.

Although the liver is the organ showing the greatest histological change in animals poisoned by DDT, animals or human beings made sick by the compound suffer from dysfunction of the neuromuscular system and not from liver dysfunction. Although very large doses undoubtedly produce liver injury, the injury is frequently not sufficient to be detectable by liver function tests, nor sufficient to interfere with the animal's health. Because of the predominance of the neuromuscular disturbance, it is remarkable that competent pathologists have failed to find any extensive changes in the nervous systems of DDT-poisoned animals. In the most thorough study which has been made of the subject, Globus [21, 22] failed to find any pathology resulting from DDT in the brain or spinal cord of monkeys, dogs, cats, and rats.

DDT is stored in the adipose tissue of all mammals and birds that have been studied in this regard. Rats fed DDT daily at a constant rate store more and more of the material in their fat for a time, but gradually reach a plateau so that no additional storage occurs in spite of continued intake. The plateau or equilibrium level is characteristic of the dosage. If the dosage is doubled, then the equilibrium storage will be almost

but not quite doubled. Rats and monkeys reach equilibrium in DDT storage in something less than six months. Although other animals have been studied in less detail, it appears that they store DDT in the same way. Thus, DDT storage is proportional to dosage for animals of the same sex and species. In rats there is a very distinct difference in DDT storage between the sexes; in monkeys and pigs the difference is extremely small, if a difference exists. Broadly speaking, different species of mammals and birds which have been studied store DDT at the same rate. This does not imply that species differences cannot be detected, but rather that they are small. Information so far available on the storage of DDT in man indicates that man represents no radical exception to the general rule.

DDT is broken down by the body and two of the products—DDA and DDE—have been identified. Both of these materials are formed by man. DDA, the acetic acid derivative of DDT, is excreted in the urine,[44] and DDE, the dehydrochlorinated derivative, is stored in the fat.[36, 47] Although less than half of the DDT-derived material in the general diet is DDE, more than half of such material stored in human fat tissue is DDE. This indicates that human beings convert DDT to DDE. Final evidence for the conversion was provided by a study of persons exposed to relatively large doses of *p*-p′-isomer.

DDT-derived material is excreted in man in urine, feces, and milk. Animal studies have indicated that DDT occurs in the secretion of the skin and that it passes the placental barrier into the fetus.

The absorption and subsequent excretion of chemical substances is more general than some suppose. Thus, Sapeika [48] has recorded the presence of alcohol, caffeine (or a derivative), nicotine, and a wide range of drugs in human milk. The excretion of a small amount of lead must be considered normal; its concentration in the urine is usually at a rate of 0.005–0.05 ppm, and may average 0.1 ppm in areas where there is increased environmental exposure.[42] It is only when higher dosage levels and thus higher excretion levels are encountered that there begins to be a danger of lead poisoning. In a similar way, the mere presence of stored material in the tissues does not necessarily represent an injury, and when injury is involved it may not correlate with the degree of storage.[17, 31]

One of the most promising recent developments is the demonstration that exposure of human beings to significant dosage levels of DDT can be quantitatively related to the excretion of DDA in the urine. Formerly, the measurement of DDA in the urine has been accomplished or considered only in connection with single doses that were at or extremely near the toxic level. It has been a great drawback in the past that the only objective measure of human exposure to DDT was storage of the material and its derivative, DDE, in the fat. Persons who had extensive occupational exposure were frequently and understandably unwilling to submit to biopsy because they were healthy and had nothing but inconvenience to gain from volunteering. It should now be possible to measure objectively the exposure of workers, some of whom have been constantly engaged in the manufacture or formulation of DDT for eight years or more.

Probably the most important need in the field of DDT research at this time is a complete balance study. It is true that Judah [28] was able to account for essentially all the DDT injected intravenously into rats three hours before sampling. However, the conditions of the experiment were highly artificial, and success has been very much poorer in accounting for the total dosage under more practical conditions. Considerable progress has been made recently, and

it appears possible that the problem will be solved within the next few years. Until a balance study has been completed under conditions reasonably similar to those encountered by human beings, there will remain a question whether the portion of the dosage that cannot now be accounted for has some significance which we do not now grasp.

The fact that research remains to be done is not a valid reason for alarm. A great deal is known about the toxicology and pharmacology of DDT, but its basic mode of action remains unknown. The same is true of aspirin and barbiturates which are the cause of many more fatal accidents than all the insecticides taken together.

In evaluating the safety of DDT one must observe that there has been a very small number of accidents with it in spite of the tremendous tonnage that has been used. Careful studies of workers with extensive occupational exposure have indicated the safety of the material [1, 2, 15, 20, 23, 40, 50, 51] and it is clear that more occupational disease has been caused by the solvents in DDT formulations than by the compound itself. It has even been suggested that more people are injured by spray rigs and other devices for distributing insecticides than by all insecticides themselves.

DDT Residues—Because of the chemical stability of DDT under field conditions, and because the compound is stored in fat, it was realized at least as early as 1945 that DDT presents a potential residue problem. There has been much discussion of this problem and much investigation of certain aspects of it. Most of the published values for residues concern only a single food product and frequently concern products that were treated under artificial conditions and at rates higher than those recommended by agricultural authorities and followed in actual practice. Until recently, there was a strange lack of information on the amount of DDT in food which might reasonably be expected to form the total diet. Walker, et al.,[55] studied restaurant meals and also meals in an institution. A number of restaurants were investigated. An effort was made to choose the most popular breakfast, lunch, and supper offered each day by each restaurant. Extremely expensive and specialty items were avoided. In each instance a complete balanced meal was analyzed. No meal was found, either in the restaurants or in the institution, which failed to contain some DDT, although some individual food items in the meals were regularly free of the compound. Fatty foods, or foods cooked in fat, tended to contain more DDT than other foods. The average concentration of DDT in the food on a dry basis was 0.31 ppm. The average total amount for breakfast, plus lunch, plus supper, was 184 μg., which would determine for a man of average size a dosage of 0.0026 mg./kg./day. This dosage is to be compared with a dosage of 0.5 which has been taken without injury by volunteers.

In conclusion, there is abundant evidence to indicate that DDT is a safe material under actual conditions of use. Although it occurs in our diet, and is stored in our fat, there is no indication that the amounts involved are injurious. Human beings, as well as animals, can withstand much greater exposure and much greater storage than are now prevalent. The greatest recent advances in our knowledge of DDT are those which define the current exposure and the magnitude of tolerable dosages involving this compound which has contributed so significantly to public health and to agriculture. This quantitative information based on human rather than animal exposure should do much to satisfy any reasonable doubts about the safety of DDT.

REFERENCES

1. Anderson, A., and Khorram, M. A. Exposure to DDT. Brit. M. J. 1:1132–1134, 1948.

2. Angely, J. C. Toxicity of DDT in Kerosene. Air Surg. Bull. 2:77-78, 1945.
3. Biskind, M. S. DDT Poisoning and X-Disease in Cattle. J. Am. Vet. M. A. 114, 862:20, 1949.
4. ————. DDT Poisoning a Serious Public Health Hazard. Am. J. Digest Dis. 16, 2:73, 1949.
5. ————. DDT Poisoning and the Elusive "Virus X:" A New Cause for Gastro-Enteritis. Ibid. 16, 3:79-84, 1949.
6. ————. The New Insecticides and the Public Health. Harefuah 44, 1:9-13, 1952.
7. ————. Public Health Aspects of the New Insecticides. Am. J. Digest Dis. 20, 11:331-341, 1953.
8. Biskind, M. S., and Bieber, I. DDT Poisoning—a New Syndrome with Neuropsychiatric Manifestations. Am. J. Psychotherapy 3, 2:261-270, 1949.
9. Bologna, N. A., and Woody, N. C. Kerosene Poisoning. New Orleans Med. & Surg. J. 101, 6:256-260, 1948.
10. Cameron, G. R., and Burgess, F. The Toxicity of 2, 2-bis (p-Chlorphenyl) 1, 1, 1-Trichlorethane (D.D.T.). Brit. M. J. 1:865-871, 1945.
11. Cameron, G. R., and Cheng, M. B. Failure of Oral D.D.T. to Induce Toxic Changes in Rats. Ibid. 2:819, 1951.
12. Campbell, A. M. G. Neurological Complications Associated with Insecticides and Fungicides. Brit. M. J. 2:415-417, 1952.
13. Case, R. A. M. Toxic Effects of 2, 2-bis (p-Chlorphenyl) 1, 1, 1-Trichlorethane (D.D.T.) in Man. Brit. M. J. 2:842, 1945.
14. Committee on Pesticides. Pharmacologic and Toxicologic Aspects of DDT (Chlorophenothane U.S.P.) J.A.M.A. 145: 728-733, 1951.
15. Domenjos, R. Experimentelle Erfahrungen mit einem neuen Insektizid (Neocid-Geigy), ein Beitrag zur Theorie der Kontaktgiftwirkung. Schweiz. med. Wchnschr. 74, 36:952-958, 1934.
16. Fennah, R. G. Preliminary Tests with DDT Against Insect Pests of Food Crops in the Lesser Antilles. Trop. Agr. 22, 12:222-226, 1945.
17. Finnegan, J. K.; Haag, H. B.; and Larson, P. S. Tissue Distribution and Elimination of DDD and DDT Following Oral Administration to Dogs and Rats. Proc. Soc. Exper. Biol. & Med. 72, 2:357-360, 1949.
18. Fowler, R. E. L. Insecticide Toxicology—Manifestations of Cottonfield Insecticides in the Mississippi Delta. J. Agr. Food Chem. 1, 6:469-473, 1953.
19. Garrett, R. M. Toxicity of DDT for Man. Alabama State J. M. A. 17, 2:74-76, 1947.
20. Gil, G. P. Un problema de suma actualidad y importancia. La toxicidad del dicloro-difenil-tricloro-metilmetano (DDT) para el hombre. Med. Colon. Madrid 14, 5:427-433, 1949.
21. Globus, J. H. DDT Poisoning. Tr. Am. Neural. A. 73: 202-208, 1948.
22. ————. DDT (2, 2-bis (p-Chlorophenyl) 1, 1, 1-Trichlorethane) Poisoning. J. Neuropath. & Exper. Neurol. VII, 4:618-631, 1948.
23. Gordon, I. The Occupational Hazard of DDT Spraying. Brit. J. Indust. Med. III: 245-249, 1946.
24. Hayes, W. J., Jr. The Pharmacology and Toxicology of DDT. In Müller: The Insecticide DDT and Its Importance. Basel, Switzerland: Birkhauser. (In preparation.)
25. Higgins, E. L., and Kindel, D. J. Exfoliative Dermatitis from Contact with DDT. J. Invest. Dermat. 12, 4:207-209, 1949.
26. Hollander, L. Dermatitis Caused by DDT. Arch. Dermat. & Syph. 62:66-68, 1950.
27. Hsieh, H. C. DDT Intoxication in a Family of Southern Taiwan. Arch. Ind. Hyg. & Occup. Med. 10, 4:344-346, 1954.
28. Judah, J. D. Studies on the Metabolism and Mode of Action of DDT. Brit. J. Pharmacol. 4:120-131, 1949.
29. Jude, A., and Girard, P. Toxicité du DDT—intoxication collective par ingestion accidentelle. Ann. Med. Legale Criminol Police Sc. Med. Sociale, et Toxicol. 29, 4:209-213, 1949.
30. Karpinski, F. E., Jr. Purpura Following Exposure to DDT. J. Pediat. 37:373-379, 1950.
31. Lehman, A. J. The Toxicity of the Newer Agricultural Chemicals. Proc. Insecticides Conf. 42nd Annual Convention Nat. Canners A., Atlantic City, N. J., January 17, 1949.
32. Leider, M. Allergic Eczematous Contact-Type Dermatitis Caused by DDT. J. Invest. Dermat. 8:125-126, 1947.
33. Lueck, W. W. Poisoning in Children. Newer Methods of Treatment. Lancet 69, 5:155-159, 1949.
34. Mackerras, I. M., and West, R. F. K. "DDT" Poisoning in Man. M. J. Australia 1:400-401, 1946.
35. Marshall, J. Contact Dermatitis Due to DDT. South African M. J. 24:309-301, 1950.
36. Mattson, A. M.; Spillane, J. T.; Baker, C.; and Pearce, G. W. Determination of DDT and Related Substances in Human Fat. Anal. Chem. 25: 1065-1070, 1953.
37. Merkin, S. Warning: Poison in Milk! Nat. Police Gaz. 159, 3:8-9, 1954.
38. ————. DDT Is Poisoning Your Food! Ibid. 159, 5:20-21, 1954.
39. Mühlens, K. Uber die bedeutung der Dichlordiphenyl-trichlormethylmethan praparate dia arthropodengift in der seuchen bekampfung unter berucksichtigung eigner Erhafrungen. Deutsche med. Wchnschr. 71, 20:164-169, 1946.
40. Müller, P.; Domenjos, R.; Wiesmann, R.; and Buxtorf, A. I. Dichlordiphenyltrichloraethane als Insektizid und seine bedeutnng fur die human—und Veterinarhygiene. Basel, 1949.
41. Naevested, R. Forgiftning med DDT—Pulver og et par andre for giftningstilfelle. Tidsskr. f. d. norske laegefor. 67:261-263, 1947.
42. Neal, P. A.; Dreessen, W. C.; Edwards, T. I.; Reinhart, W. H.; Webster, S. H.; Castberg, H. T.; and Fairhall, L. T. A Study of the Effect of Lead Arsenate Exposure on Orchardists and Consumers of Sprayed Fruit. Pub. Health Bull. 267:181, 1941.
43. Neal, P. A.; von Oettingen, W. F.; Smith, W. W.; Malmo, R. B.; Dunn, R. C.; Moran, H. E.; Sweeney, T. R.; Armstrong, D. W.; and White, W. C. Toxicity and Potential Dangers of Aerosols, Mists and Dusting Powders Containing DDT. Supp. Pub. Health Rep. 177:1-32, 1944.
44. Neal, P. A.; Sweeney, T. R.; Spicer, S. S., and von Oettingen, W. F. The Excretion of DDT (2, 2-bis-(p-Chlorophenyl)—1, 1, 1-Trichloroethane) in Man, Together with Clinical Observations. Pub. Health Rep. 61, 12:403-409, 1946.
45. Niedelman, M. L. Contact Dermatitis Due to DDT. Occup. Med. 1:391-395, 1946.
46. Nunn, J. A., and Martin, F. M. Gasoline and Kerosene Poisoning in Children. J.A.M.A. 103, 7:472-474, 1934.
47. Pearce, G. W.; Mattson, A. M.; and Hayes, W. J., Jr. Examination of Human Fat for the Presence of DDT. Science 116, 3010:254-256, 1952.
48. Sapcika, N. Excretion of Drugs in Human Milk—a Review. J. Obst. & Gynaec. Brit. Emp. 54:426-431, 1947.
49. Scott, A. E. Health Foods Doorway to Death. Sir II, 5:44-45, 62-64, 1954.
50. Stammers, F. M. C., and Whitfield, F. G. S. Toxicity of DDT to Man. Nature 157:658, 1946.
51. ————. Toxicity of DDT to Man and Animals. Bull. Entomol. Research 38, 1:1-73, 1947.
52. Stryker, G. V., and Godfroy, B. Dermatitis Resulting from Exposure to DDT. J. Missouri State M. A. 43: 384-386, 1946.
53. Velbinger, H. H. Zur Frage der "DDT"—Toxizitat fur Menschen. Deutsche. Gesundheitsw. 2, 11:355-358, 1947.
54. ————. Beitrag zur Toxikologie des "DDT"—

Wirkstoffes Dichlor-diphenyl-trichlormethyl methar. Pharmazie 2, 6:268–274, 1947.
55. Walker, K. C.; Goette, M. B.; and Batchelor, G. S. Pesticide Residues in Foods. Dichlorodiphenyltrichloroethane and Dichlorodiphenyldichloroethylene Content of Prepared Meals. J. Agr. Food Chem. 2, 20:1034–1037, 1954.
56. Wittich, F. W. Respiratory Tract Allergic Effects from Chemical Air Pollution. Arch. Ind. Hyg. & Occup. Med. 2, 3:329–334, 1950.
57. Wright, C. S.; Dean, C. A., and Haynie, H. C. Agranulocytosis Occurring after Exposure to a DDT Pyrethrum Aerosol Bomb. Am. J. Med. 1, 5:562–568, 1946.
58. Zein-el-Dine, K. The Insecticide DDT. J. Roy. Egyptian M. A. 29, 1 and 2:38–54, 1946.

Response to Changing Needs

In response to changing needs and new developments in the public health field in recent years, the name of the Columbia University School of Public Health, by vote of the university trustees, on recommendation of the Faculty of Medicine, has been changed to the School of Public Health and Administrative Medicine. The five-year-old Institute of Administrative Medicine will be absorbed into the organizational structure of the school as of June 30, 1955. At that time the newly appointed director of the school, Ray E. Trussell, M.D., will take office. He will also be DeLamar professor of administrative medicine and associate dean for public health in the Faculty of Medicine. He succeeds Harold W. Brown, M.D., who has resigned to continue as professor of parasitology.

According to Willard C. Rappleye, M.D., dean of the faculty and vice-president in charge of medical affairs, the recommendation was made "in recognition of the fact that increasingly in the future public health administration will include the administration of medical care plans, prepayment hospital and medical insurance, and hospital administration."

The School of Public Health was founded in 1921, the only graduate institution of its kind in the New York area. It is one of four units under the aegis of the Faculty of Medicine—College of Physicians and Surgeons, School of Dental and Oral Surgery, Department of Nursing, and School of Public Health.

Dr. Trussell has for the past five years been director of the Hunterdon County (N.J.) Medical Center, starting in its blueprint stage and through its opening in July, 1953.

A Water-Borne Outbreak of Amebiasis

ANDREW C. OFFUTT, M.D.; BLUCHER A. POOLE, C.E., F.A.P.H.A.; and GEORGE G. FASSNACHT, M.C.E.

The taking of infinite pains—alleged to be the basis of genius—clearly was responsible for the success of this investigation into what seemed superficially to be the usual food-borne outbreak of dysentery.

Fortunately, health department officials are called upon to investigate water-borne epidemics at such infrequent intervals that the individuals are few indeed who can claim any great experience in the field. These outbreaks have been looked upon as explosive in nature, affecting a relatively large percentage of the exposed population. They are preceded by abnormal diarrheas if the major infection is one with more severe and longer incubating symptoms.

It seems wise, therefore, to present certain details of a water-borne outbreak of amebiasis in South Bend, Ind., during the first half of 1953 because it did not fit this pattern. The general term amebiasis is used to embrace all infections of Endameba histolytica, including, but not limited to, the clinical symptoms of amebic dysentery. A majority of the cases that were finally accepted for use in the study, however, were characterized by bowel movements numbering from six a day to fecal incontinence.

An Outbreak Develops—Because of the obscurity of the early phases in this outbreak and the lack of immediate correlation between reporting and date of case onset, certain events in retrospect assume different and greater significance than was appreciated at the time of the investigation.

Unadjusted gross figures at first available showed three cases in the early summer of 1951, four from January to mid-March of 1953, 18 more by May first and an additional 23 by the end of May. From the final tabulation represented in Figure 1, it now appears that there were never more than one to three new cases in any one week and only a total of 22 cases during the 15 weeks of the 1953 portion of the outbreak. One onset was placed back as far as 1945. Nearly a third of the cases were eliminated as endemic in the half dozen surrounding counties.

A complete report of the epidemiologic study will be found in a paper entitled "Studies of a Water-Borne Outbreak of Amebiasis, South Bend, Indiana. I. Epidemiological Aspects," currently being prepared by the U. S. Public Health Service, Communicable Disease Center, at Atlanta, Ga. The following details on the medical phase are largely abstracted from preliminary drafts of that paper.

The first recognized event in the outbreak was a routine investigation in June, 1952, of four cases of amebiasis reported by two internists in South Bend. The state epidemiologist concurred in their diagnosis in three instances, noting that all were employees of one factory in the city. At that time the dates of onset were placed early in the summer of the previous year. The usual investigation was recommended, including stool samples from familial contacts and from employees in eating establishments that had been frequented. No new cases were reported until the middle of March, 1953,

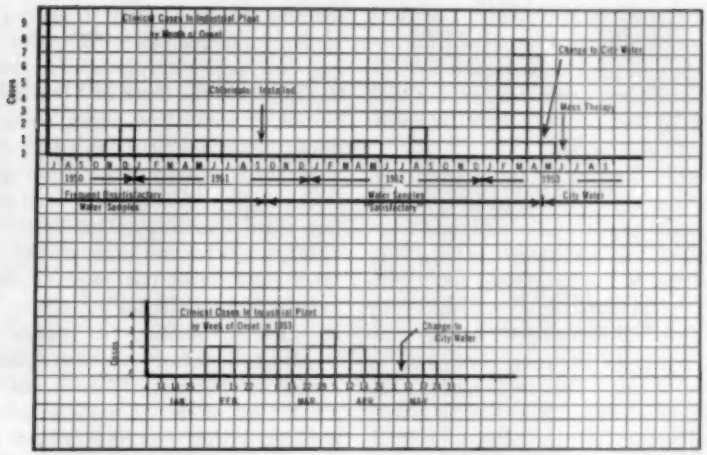


Figure 1—Amebiasis, South Bend, Ind. (Data from the U. S. Public Health Service, Communicable Disease Center, Atlanta, Ga.)

when two were recorded. By the following week the South Bend Medical Foundation had positive laboratory specimens from two more cases. The state epidemiologist found a death recorded some six months previously for a resident in a neighboring county who had worked in South Bend. These developments led to further investigation of water, food, and milk as possible sources of the infection. No overt evidence was found to implicate the city water supply or any of the common food or milk supplies in the area. All the men so far reported had worked in the same factory.

Examinations were made on 200 food handlers in the city during the latter part of March and April by the local health department and the South Bend Medical Foundation. From these examinations eight food handlers were found to harbor E. histolytica. Two of the four employees at the cafeteria of the factory in question were among these carriers. Infected food handlers were also found among employees in restaurants situated near the plant and patronized by employees of the plant. Thus, the possibility that carriers among food handlers may have contributed to the outbreak was given serious consideration.

The presence of amebiasis in the community, especially an autopsy report on an amebic liver abscess, was described to medical staff meetings in local hospitals during April. This stimulated much medical interest which resulted in a larger number of patients being referred to the laboratory for stool examinations. Reports of positive findings from the laboratory came with increasing frequency. There were additional cases in South Bend that had no contact with the factory. There were other cases from St. Joseph and surrounding counties, some of which were factory connected. The outbreak assumed interstate proportions when a case was reported from an

---

Dr. Offutt is state health commissioner, Mr. Poole is director of the Bureau of Environmental Sanitation, and Mr. Fassnacht is chief, Water Supply Section, State Board of Health, Indianapolis, Ind.

This paper was presented before a Joint Session of the Engineering, Epidemiology, Food and Nutrition, and Laboratory Sections of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 14, 1954.

adjacent county in Michigan. The state health commissioner approached the regional office of the Public Health Service for epidemiologic assistance, asking that someone be assigned who had had experience with amebiasis.

Medical Epidemiologic Investigation—Under the direction of an epidemic intelligence service officer assigned from the Communicable Disease Center a very comprehensive investigation was initiated. Typical histories were obtained by the medical epidemiologists or the public health nurses for each confirmed or suspected case. The information collected included symptoms; date of onset; place of employment; sources of food, water, and milk; contact with known cases; and travel to tropical or endemic areas. Hospital records were abstracted. A date of onset of illness was assigned for each case as the beginning of a severe and protracted gastrointestinal disturbance that was clearly a new and different experience for the individual. In some cases it was found that the disease had continued for one or more years before specific diagnosis was made.

While the patient interviews were still in progress, surveys were made to determine whether the prevalence of amebic infection in the employees of the suspected factory was different from that in employees of a nearby factory which was used for control. Definite criteria were established in selecting the individuals to be surveyed so that, other than their place of employment, the background of the individuals would be the same. Those who were surveyed at both plants were interviewed for clinical and epidemiologic data and all submitted stool specimens.

A total of 48 cases of amebiasis was reported from South Bend and the surrounding area. Two of these were omitted from the study when it was learned that onset dates went back as far as 1945 and 1948. Thirty-one of the remaining 46 cases occurred among 1,500 employees of the factory in question giving an approximate attack rate of 21/1,000 for the three and one-half year period. Seven cases among residents of South Bend and St. Joseph County who were not employed at the plant gave an attack rate in this group (total population more than 200,000 persons) of only 0.032/1,000 for the same period. There were eight cases unconnected with the factory from a similar population in the counties surrounding St. Joseph. Two-thirds of the factory connected cases had onsets in February, March, or April, 1953. All of the 31 cases of amebiasis connected with the factory had typical and definite symptoms of the disease; only five of the 15 nonfactory cases could be so classified.

The survey of an approximate 10 per cent sampling of employees at the factory showed that 50.7 per cent were harboring E. histolytica; just 4.4 per cent in the control factory were so infected. It was largely on the basis of these facts concerning symptoms and attack rates that further clinical and epidemiologic studies were restricted to employees of the suspect plant.

Reference to Figure 1 indicates that the epidemic might be divided into two distinct phases. The early phase, which lasted two or more years, was characterized by a low and sporadic incidence of disease. The later phase lasted approximately three months and was characterized by a sharp increase in incidence, but hardly a typical case-onset curve. Both the early cases and the late cases were distributed throughout the various buildings and on the several floors in each building in apparently random fashion. There was no suggestion of a concentration of cases, nor of carriers, in any location within the plant.

A study of gastrointestinal illnesses treated at the clinics in the suspected

factory and its control gave no evidence of either a high endemic level or of an epidemic of gastrointestinal disease.

A study of the epidemiologic histories showed that while a cafeteria within the plant was available to all employees, approximately 90 per cent of the workers carried a home prepared lunch. Milk vending machines and soft drink dispensers were available in the plant, but the possibility of cross-infection in the handling of these bottles was not considered significant. Study of the household water and milk supplies, of the geographic location of the residence, of racial background, of home sewage disposal, contact with other known cases or carriers, and history of travel to foreign countries, for both clinical cases and carriers, did not reveal any suggestive sources of infection other than the plant water supply.

Thus by exclusion, the most probable vehicle, at least for the 1953 outbreak, was a contaminated plant water supply. Satisfactory bacteriologic samples from this chlorinated well supply were no defense against such a hypothesis, for both bacillary dysentery and coliform organisms would be killed by the normal 0.3–0.4 ppm chlorine residuals that had no damaging effect on cysts of E. histolytica.

Engineering Aspects—It must be admitted that the water supply at the factory was not above initial suspicion. In March, 1953, however, when there were only four current cases of amebiasis, and it had been shown that two of the four food handlers in the plant cafeteria were carriers, engineers assigned to the investigation were not inclined to accept any water-borne theories without certain mental reservations. It looked like another food-borne epidemic.

Bacteriologic analysis of water samples prior to July, 1949, had been quite satisfactory, but beginning at that time and running for nine months a local laboratory found rather numerous samples containing coliform organisms.* These were attributed to rather extensive replacement of pipe in the plumbing system, since samples from the well, and from the powerhouse after repumping, continued to be satisfactory. Disinfection of the plumbing system failed to produce the desired results and in September, 1951, a chlorinator was installed. Samples after that time were uniformly satisfactory.

Water at the plant came from three sources. The fire sprinkler system was supplied from a dug well about 40 feet deep with static level at 20 feet. Potable, boiler and industrial water normally was pumped from a 118-foot gravel packed well that tapped a sand aquifer beginning at 90 feet. A 30-foot layer of clay separated the first and second water strata. City water was also available as a standby for the potable supply at the high service pump suction.

The gravel packed well was equipped with a vertical turbine pump which discharged to a 1,300-gallon receiving tank under atmospheric pressure in a concrete underground vault or pit. Chlorine solution from the gas chlorinator, wired to operate with the pump, was applied just ahead of this tank. From the receiving tank water flowed or was sucked through a 6-inch bell and spigot cast iron water pipe to a pair of steam driven pumps in the powerhouse basement. The steam pump suction header was some 18 inches lower than the receiving tank outlet. These pumps discharged through a pressure tank, at varying rates up to an estimated 500 or 600 gpm, to the branching distribution system. There was no recirculation of water.

It was recognized that the environment

* This and the following comments on the water supply are abstracted from a paper entitled "Engineering Studies Connected with an Outbreak of Amebiasis, South Bend, Indiana, 1953," by George G. Fassnacht and Jack H. Fooks. J.A.W.W.A. 46, 11:1129 (Nov.), 1954.

of the gravel packed well did not meet present standards. The well was of double tubular construction, however, and took water from sand under 30 feet of clay. Furthermore, it had no record of coliform contamination.

Early in the investigation great effort had been expended on tracing plumbing and checking for potential points of backsiphonage or contamination. None was found that appeared to have any significance as an answer to the problem.

It became increasingly apparent, as information was gathered and studied, that any contamination of the factory water supply which would explain the outbreak must have entered between the 1,300-gallon receiving tank and the high service pumps. Moreover, negative heads of 6 and 15 inches of mercury had been read on the suction header, and although exact location of the 6-inch cast iron line from the receiving tank was not known, it had to cross the path of the powerhouse sewer at one or more places to get to the high service pumps.

A qualitative leakage test on the pipe between the receiving tank and the high service pumps, hereafter referred to as the suction line, showed that it would not hold pressure. The leakage was then measured quantitatively by loss from a barrel on the powerhouse roof at 10 gallons per hour under 24 psi pressure. This leakage of less than one-fourth gpm occurred under pressures approximately three times the magnitude of the maximum suction observed during normal operation.

Dye Tests—As negative head and leakage had both been demonstrated on the suction line, the next logical step was to try to draw dye from the sewer into the water line. Two attempts in May were inconclusive if not outright unsuccessful. About this time a posthole was started beside the sewer to see if ground water might be diluting any dye that leaked from the sewer. Digging was easy in the fine yellow sand and instead of a posthole an excavation was soon opened that exposed the cast iron sewer, two fire lines, and what must have been the suction line only 5 inches horizontally from the sewer.

This was a much different situation than some of the old-timers around the plant had "remembered." It had been reported that the suction line was 5 feet below the sewer where they were in proximity. Now that the possibility of protective filtering media was disproved, it was decided to try again to show contamination from the sewer into the water line. Chlorides were rejected as an indicator when it was learned from plant records that some 100 pounds of salt from zeolite softening regeneration were flushed down the sewer every 30 hours without noticeable effect on the chloride content of boiler make-up water.

Both previous attempts with dye had been made under rather normal conditions. The third trial was made on the basis of normal pumpage but with a surcharged sewer. Again the results were negative. Better flooding facilities were available for the fourth test, the maximum negative head was developed, and the discharge of the high service pump was cut to 18 gpm.

Samples from the pump discharge at 8:20 and at 9:00 p.m. gave no indication of fluorescence under portable ultraviolet light. The 11:00 p.m. sample was very suspicious when compared to the other samples under normal incandescent lighting. Under ultraviolet light there was no question; dye introduced into the sewer had been pulled through into the water line. This fact was definitely verified later by examining the samples with an electronic photofluorometer.

When management at the factory learned that dye had been pulled from the sewer into the water system, they directed that the pipe be excavated in order to get exact location for its full length. Enough points were uncovered to justify a location as indicated in

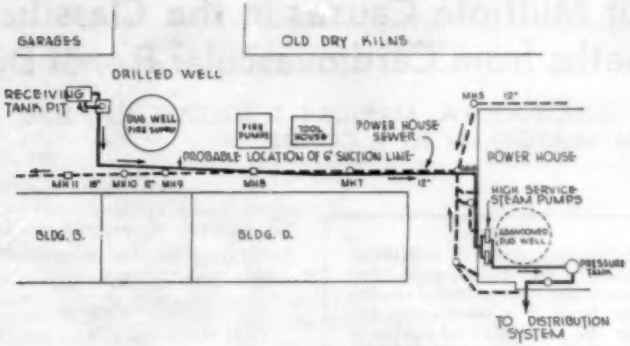


Figure 2—Plan of Well Area

Figure 2. To simplify the drawing, standard gauge side and switch tracks of the plant railroad, which paralleled and crossed the sewer and water lines, are not shown.

Each exposed portion of the suction line was examined with considerable interest. At all points observed it appeared to be in good condition. Tar coating was still intact and the lead caulked bell joints showed no sign of failure. The cast iron sewer, too, was in a good state of preservation. Metal had been used for the sewer to give it more resistance to the thermal shock of alternate boiler blowdown and cold water.

One Leak Demonstrated—In oil separator manhole number eight the cast iron suction line was found half submerged in liquid and nearly obscured by oil and scum. A bell and spigot joint was located in this box. During the time the sewer was surcharged for the final dye test the bell joint had been under a foot of water. When the quantitative leakage test was repeated a red dye was added to the water in the barrel. This time the leakage was measured at approximately 27 gallons per hour or nearly one-half gallon per minute.

No tests were made to determine if all the leakage occurred at the joint in manhole number eight. Under pressure, colored water oozed into droplets at the top of that caulked joint. As one drop was wiped away another would form. Leakage from the submerged portion of the joint could not be observed directly; however, water dipped from under the oil slick was very definitely red. It is rather obvious that any sewage which may have entered the suction line at this point would not have been subject to the filtering action of even a few inches of sand that surrounded other portions of the pipe.

The French police are said to solve their mysteries by following the axiom "cherchez la femme." In New York State typhoid outbreaks for years were solved by the simple expedient of locating Typhoid Mary. Probably the real answer to this amebiasis mystery will be found in connection with what Alexander Langmuir, M.D., euphoniously calls the brown trout which was in the right place and under the right circumstances to contribute infection when the suction line leaked.

ACKNOWLEDGMENTS—The investigation was characterized by close cooperation of many individuals and agencies. Credit for successful culmination is not claimed by the authors who act in this instance as coordinators to write the story. Specific acknowledgments are made in the text of the two papers abstracted. Particular credit is here given to our colleagues in the State Board of Health, in the South Bend City Health Department, in the U. S. Public Health Service, in the South Bend Medical Foundation, and at Louisiana State University School of Medicine.

Use of Multiple Causes in the Classification of Deaths from Cardiovascular-Renal Disease

LOUIS WEINER, F.A.P.H.A.; MARJORIE T. BELLOWS, F.A.P.H.A.; GRACE H. McAVOY; and ELI V. COHEN

Though this is a study in statistical methodology by statisticians for statisticians, the nonstatistical reader will gain from it a wholesome respect for the possibility of inherent inexactitude in seemingly solid statistics and the need always to use or interpret them with caution.

This report deals with a group of deaths in which the underlying cause, as determined by the standard World Health Organization rules, was cardiovascular-renal disease. It describes an attempt to reclassify the causes of these deaths according to a scheme which utilizes multiple cardiovascular-renal causes when they appear on the death certificate. To understand some of the problems involved, it is necessary to review the accepted criteria for diagnosing these diseases and the current practices for classifying deaths from them.

The criteria for diagnosis of cardiovascular disease developed by the New York Heart Association and recommended by the American Heart Association for use throughout the United States require a diagnosis in four parts: (1) The etiologic basis of the disease, such as arteriosclerosis or hypertension; (2) the anatomical or structural changes involved, such as thrombosis of the coronary artery or active myocarditis; (3) the disturbance of cardiac physiology or the patient's symptomatology. Terms such as ventricular fibrillation or cardiac insufficiency describe physiological disturbances; and (4) the functional and therapeutic classification which is an estimate of the patient's ability to perform physical activity, and prescribes the amount of activity to be allowed. According to this classification, it requires at least three terms to describe a cardiovascular diagnosis.

Vital statistics offices use the International Statistical Classification of Diseases, Injuries, and Causes of Death (hereafter referred to as I.S.C.) together with the rules suggested by the World Health Organization. These rules require that a death be assigned to one cause only and that the cause to which such assignment is made be the "underlying cause." The underlying cause is defined as "the disease or injury which initiated the train of morbid events leading directly to death." Strict adherence to this principle would result in the assignment of practically all deaths from cardiovascular-renal disease to the etiologic diagnosis, such as arteriosclerosis, hypertension, rheumatic fever—the three most frequent—or some combination of these etiologies.

However, in the group of cardiovascular-renal diseases, the underlying cause rule is not adhered to strictly. Instead, priorities are set up for the various terms appearing in the medical certification. For example, if coronary heart disease (I.S.C. 420.1) and arteriosclerotic heart disease (I.S.C. 420.0) appear anywhere on the same certificate, the death is classified as arteriosclerotic heart disease. On the other hand, a combination of coronary disease and general arteriosclerosis (I.S.C. 450) is classified as coronary heart disease. Both these combinations describe what is probably the same disease, but they are not classified similarly.

Cerebro-vascular lesions and arterio-

Table 1—Special Abbreviated Cause Code Used in Study of Certificates with Cardiovascular-Renal Disease

This Code Number	Title	International Statistical Classification Rubrics
01	Vascular lesions (cerebral)	330–334
02	Rheumatic fever and chronic rheumatic heart disease	400–416
03	Arteriosclerotic heart disease	420–422
04	Hypertensive heart disease	440, 441, 443
05	Hypertensive heart disease with arteriolar nephrosclerosis	442
06	Hypertensive disease without mention of heart	444, 445, 447
07	Hypertension with arteriolar nephrosclerosis without mention of heart	446
08	General arteriosclerosis	450
09	Chronic nephritis	592–594
10	Other diseases of circulatory system	304, 430–434, 451–456, 460–468, 782

sclerotic nephritis offer other examples in which the principles of classification seem inconsistent. In the former, the anatomical site of involvement is given preference, and no attempt is made to differentiate between lesions with arteriosclerotic and those with hypertensive etiology. Arteriosclerotic nephritis, on the other hand, is classified etiologically, but under hypertension (I.S.C. 442 or 446, depending whether heart disease is also mentioned) even though "hypertension" may not even appear on the certificate. Thus it may be seen that present-day mortality statistics for cardiovascular-renal disease are derived from a classification which is based on neither etiology nor anatomical involvement.

For these reasons, it was decided to analyze all the deaths in which cardiovascular-renal disease was the underlying cause, to determine how frequently the multiple causes stated on a death certificate describe a cardiovascular-renal diagnosis, which can be expressed in terms of its possible etiology and the anatomical involvement, under a single rubric. The etiologic condition may appear on the certificate merely as an associated factor without the specification that it actually was the etiologic basis for the anatomical involvement.

Method

The New York City Department of Health prepared, for experimental tabulations, multiple cause cards for 4,768 deaths occurring in four of the city's five boroughs during January, 1954. Each cause mentioned on every certificate was coded according to the four-digit rubrics of the detailed International Statistical Classification of Diseases, Injuries, and Causes of Death. Each different four-digit code (seven was the greatest number of different causes on any one certificate) was punched on a tabulating card prepared for every certificate.

A special abbreviated code of 10 rubrics (Table 1) was set up to describe groups of cardiovascular-renal disease into which separate terms on the death

Mr. Weiner is chief, Statistical Division, Miss McAvoy is nosologist, and Mr. Cohen is administrative assistant, IBM Tabulating Division, Bureau of Records and Statistics, New York City Health Department; Miss Bellows is chief statistician, American Heart Association, New York, N. Y.

This paper was presented before a Joint Session of the American Association of Registration Executives and the Statistics Section of the American Public Health Association at the Eighty-Second Annual Meeting in Buffalo, N. Y., October 12, 1954.

Table 2a—Combinations of Abbreviated Code Numbers Used to Select Cardiovascular-Renal Conditions Associated with Arteriosclerosis (1,791 deaths)

Anatomical Sites Affected	Number of Deaths in Group	Abbreviated List Causes on Certificates: Vascular Lesions (cerebral)	Arteriosclerotic Heart Disease	Hypertensive Heart Disease	Hypertensive Heart Disease and Arteriolar Nephrosclerosis	Hypertension, No Heart	Hypertension and Arteriolar Nephrosclerosis, No Heart	General Arteriosclerosis	Chronic Nephritis
		Special Abbreviated Cause Code: 01	03	04	05	06	07	08	09
Heart only	1,483	0	X	0	0	0	0	*	0
Cerebral vessels only	92	X	0	0	0	0	0	X	0
Kidney only	2	0	0	0	0	0	X	X	0
	2	0	0	0	0	0	0	X	X
Heart and cerebral vessels	135	X	X	0	0	0	0	*	0
Heart and kidney	5	0	X	0	0	0	X	*	*
	10	0	X	0	X	0	0	*	*
	8	0	X	0	0	0	0	*	X
		0	0	0	X	0	0	X	*
Cerebral vessels and kidney	2	X	0	0	0	0	X	X	0
		X	0	0	0	0	0	X	X
Heart, cerebral vessels, and kidney		X	X	0	0	0	X	*	*
		X	X	0	X	0	0	*	*
	1	X	X	0	0	0	0	*	X
		X	0	0	X	0	0	X	*
Arteriosclerosis only	49	0	0	0	0	0	0	X	0

* With or without this particular cause.

certificate were classified. Two or more causes falling in the same broad group were considered as one. For example, a certificate on which coronary sclerosis (I.S.C. 420.1) appeared together with chronic myocarditis (I.S.C. 422.2) but with no other cardiovascular-renal condition, was considered as having only one cause, rubric 03 of the special abbreviated code. The special code numbers for the underlying as well as for every other cardiovascular-renal condition mentioned were punched on a summary card for each certificate.

Combinations of the first nine broad groups were used to determine the etiologic and the anatomical classification. Tables 2a, 2b, and 2c show these combinations. For example, in Table 2a which refers to arteriosclerotic disease, the second line reads "cerebral vessels only" and means "arteriosclerosis with mention of cerebral vascular involvement only." This was defined as the combination of cerebral vascular lesions with general arteriosclerosis (rubrics 01 and 08 of the special abbreviated code) when no other cardiovascular-renal condition

Table 2b—Combinations of Abbreviated Code Numbers Used to Select Cardiovascular-Renal Conditions Associated with Hypertension (294 deaths)

Anatomical Sites Affected	Number of Deaths in Group	Abbreviated List Causes on Certificates: Vascular Lesions (cerebral)	Arteriosclerotic Heart Disease	Hypertensive Heart Disease	Hypertensive Heart Disease and Arteriolar Nephrosclerosis	Hypertension, No Heart	Hypertension and Arteriolar Nephrosclerosis, No Heart	General Arteriosclerosis	Chronic Nephritis
		Special Abbreviated Cause Code: 01	03	04	05	06	07	08	09
Heart only	107	0	0	X	0	*	0	0	0
Cerebral vessels only	80	X	0	0	0	X	0	0	0
Kidney only	2	0	0	0	0	X	X	0	0
	1	0	0	0	0	X	0	0	X
Heart and cerebral vessels	89	X	0	X	0	*	0	0	0
Heart and kidney		0	0	X	0	*	X	0	*
	1	0	0	X	1	*	0	0	*
	4	0	0	X	0	*	0	0	X
		0	0	0	1	X	0	0	*
Cerebral vessels and kidney		X	0	0	0	X	0	0	X
	1	X	0	0	0	X	X	0	0
Heart, cerebral vessels, and kidney		X	0	X	0	*	X	0	*
		X	0	X	1	*	0	0	*
	2	X	0	X	0	*	0	0	X
		X	0	0	1	X	0	0	*
Hypertension only	7	0	0	0	0	X	0	0	0

* With or without this particular cause.

appeared on the certificate. Two combinations were used to define arteriosclerotic disease with mention of kidney involvement only—the third and fourth lines of Table 2a. One was a combination of arteriolar nephrosclerosis without mention of heart disease (rubric 07 of the special abbreviated code) with general arteriosclerosis, and the other a combination of chronic nephritis (rubric 09 of the special abbreviated code) with general arteriosclerosis. In order to be included in this group, no other cardiovascular-renal condition could appear on the certificate with either of these combinations.

Tables 2b and 2c show the corresponding combinations used in the classification of hypertensive disease, and mixed hypertensive and arteriosclerotic disease. Four of the combinations which were used, totaling 100 deaths, are not shown in Table 2. These were rheumatic heart disease by itself (90 deaths), rheumatic heart disease and cerebral vascular lesions (two deaths), rheumatic heart dis-

Table 2c—Combinations of Abbreviated Code Numbers Used to Select Cardiovascular-Renal Conditions Associated with Arteriosclerosis and Hypertension (278 deaths)

Anatomical Sites Affected	Number of Deaths in Group	Abbreviated List Causes on Certificates: Vascular Lesions (cerebral)	Arteriosclerotic Heart Disease	Hypertensive Heart Disease	Hypertensive Heart Disease and Arteriolar Nephrosclerosis	Hypertension, No Heart	Hypertension and Arteriolar Nephrosclerosis, No Heart	General Arteriosclerosis	Chronic Nephritis
		Special Abbreviated Cause Code: 01	03	04	05	06	07	08	09
Heart only	156	0	X	X	0	*	0	*	0
	35	0	X	0	0	X	0	*	0
	10	0	0	X	0	0	0	X	0
Cerebral vessels only	13	X	0	0	0	X	0	X	0
Kidney only		0	0	0	0	X	X	X	*
		0	0	0	0	X	0	X	X
Heart and cerebral vessels	29	X	X	X	0	*	0	*	0
	12	X	X	*	0	X	0	*	0
	21	X	*	X	0	*	0	X	0
Heart and kidney	1	0	X	X	0	X	X	0	0
		0	X	X	X	0	0	*	0
		0	X	X	0	0	0	*	X
		0	0	X	0	*	0	X	X
		0	X	0	0	X	X	*	0
		0	X	0	0	X	0	*	X
		0	0	X	0	0	X	X	0
	1	0	X	X	0	0	X	0	0
		0	0	0	X	X	0	X	0
		0	X	0	X	X	0	0	0
Cerebral vessels and kidney		X	0	0	0	X	X	X	*
		X	0	0	0	X	0	X	X
Heart, cerebral vessels, and kidney		X	X	X	X	0	0	*	0
		X	X	X	0	0	0	*	X
		X	0	X	0	*	0	X	X
		X	X	0	0	X	X	*	0
		X	X	0	0	X	0	*	X
		X	0	X	0	0	X	X	0
		X	X	X	0	0	X	0	0
		X	0	0	X	X	0	X	0
		X	X	0	X	X	0	0	0
Arteriosclerosis and hypertensive disease		0	0	0	0	X	0	X	0

* With or without this particular cause.

ease with kidney involvement (two deaths), and rheumatic and arteriosclerotic heart disease (six deaths).

It may be well to point out that the combination of terms on the death certificates were derived not from the actual entries on the certificates, but from the International Statistical Classification codes for these entries. As a result, the methodology outlined involved three assumptions which lead to some inexactness of classification:

1. The etiology of arteriolar nephrosclerosis or nephritis was determined by its combination on the death certificate with other terms indicating the presence of arteriosclerosis, hypertension, or both of these conditions. In the absence of both, the nephrosclerosis was considered of indeterminate etiology. This differs from the International Statistical Classification which assumes that these conditions are associated with hypertension.

2. All terms included in I.S.C. rubrics 420–422 were considered to be arteriosclerotic heart disease. In other words, degenerative heart disease by itself was considered to be arteriosclerotic.

3. Terms included under rubric 10 of the special abbreviated code, namely, other diseases of the heart (I.S.C. rubrics 430–434), diseases of the arteries (I.S.C. 451–456), diseases of the veins and other diseases of the circulatory system (I.S.C. 460–468), senile psychosis (I.S.C. 304), and symptoms referable to the cardiovascular and lymphatic systems (I.S.C. 782) were considered to be physiological manifestations or terminal conditions and not related to the etiologic basis of the disease nor to the anatomical changes involved, and therefore, were ignored in the classification. If terms in this group were the only ones mentioned on a certificate, such a death was classified as of indeterminate etiology.

This third assumption is not entirely correct, and some modification should perhaps be made to separate out a few terms with anatomical significance. The number of deaths involved in this indeterminate group, however, was small.

Results

The results discussed here relate to 2,587 certificates on which the underlying cause of death, selected by the conventional rules, was some cardiovascular-renal disease. Table 3 summarizes the selection of the certificates.

It proved possible to "classify" all but 12 (less than 1 per cent) of 1,757 certificates on which at least two cardiovascular-renal conditions (according to the broad groups of the special abbreviated

Table 3—Death Certificates Selected for Classification of Cardiovascular-Renal Causes

Total death certificates, all causes	4,768
Number with CV-R condition as underlying cause	2,587
Number with multiple CV-R causes	1,757
Classifiable as to etiology and anatomical involvement	1,745
Not so classifiable	12
Per cent not classifiable	0.7
Number with one broad group CV-R cause only	830
Classifiable as to etiology and anatomical involvement	718
Not so classifiable	112
Per cent not classifiable	13.5

code) were mentioned. In other words, in almost all the cases in which the physician reported a multiple diagnosis, it was possible to extract from his statements the anatomical involvement and an associated condition which may have been the etiologic basis of the disease.

Of the 830 certificates with only a single group cause, all but 112 (13.5 per cent) were classifiable according to this scheme. The total thus classifiable was 2,463 or 95 per cent of the certificates.

Table 4 cross-tabulates the 2,587 deaths in this study according to the scheme proposed and the conventional

Table 4—Etiologic and Anatomical Classification According to Conventional Scheme

Line Number	Etiology and Anatomical Involvement	Total Certificates with Cardiovascular-Renal Disease as Underlying Cause	Conventional Underlying Cause (I.S.C.): Rheumatic Fever and Rheumatic Heart Disease	Cerebral Vascular Lesions	Arteriosclerotic and Degenerative Heart Disease	Hypertensive Heart Disease	Hypertensive Heart Disease and Nephritis	Hypertensive Disease—No Heart Disease	Hypertension and Nephritis—No Heart Disease	General Arteriosclerosis	Chronic Nephritis	Other Diseases of Circulatory System
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	Total deaths with CV-R disease	2,587	90	299	1,835	223	19	7	19	45	26	24
2	Unclassifiable (etiology not specified)	124	..	66	..	..	15	..	13	..	19	11
3	Classifiable (total)	2,463	90	233	1,835	223	4	7	6	45	7	13
4	Rheumatic disease only	94	90	2	..	..	2	..	..	..	..	..
5	Heart	90	90	..	..	..	..	..	..	..	..	..
6	Heart and cerebral vessels	2	..	2	..	..	..	..	..	..	..	..
7	Heart and kidney	2	..	..	..	..	2	..	..	..	..	..
8	Arteriosclerosis only	1,791	..	118	1,610	..	1	..	3	45	4	10
9	Heart	1,485	..	..	1,482	..	..	..	..	..	..	3
10	Cerebral vessels	92	..	90	..	..	..	..	..	2	..	..
11	Kidney	4	..	..	..	..	..	..	2	..	2	..
12	Heart and cerebral vessels	135	..	27	107	..	..	..	..	..	..	1
13	Heart and kidney	23	..	..	20	..	1	..	..	..	2	..
14	Cerebral vessels and kidney	2	..	1	..	..	..	..	1	..	..	..
15	Heart and cerebral vessels and kidney	1	..	..	1	..	..	..	..	..	..	..
16	General arteriosclerosis	49	..	..	..	..	..	..	..	43	..	6
17	Hypertension only	294	..	89	..	188	1	7	3	..	3	3
18	Heart	107	..	..	..	105	..	..	..	..	..	2
19	Cerebral vessels	80	..	80	..	..	..	..	..	..	..	..
20	Kidney	3	..	..	..	..	..	1	2	..	..	..
21	Heart and cerebral vessels	89	..	9	..	80	..	..	..	..	..	..
22	Heart and kidney	5	..	..	..	3	1	..	..	..	1	..
23	Cerebral vessels and kidney	1	..	..	..	..	..	..	1	..	..	..
24	Heart and cerebral vessels and kidney	2	..	..	..	..	..	..	..	..	2	..
25	General hypertension	7	..	..	..	..	..	6	..	..	..	1
26	Hypertension and arteriosclerosis	278	..	24	219	35	..	..	..	..	..	..
27	Heart	201	..	..	181	20	..	..	..	..	..	..
28	Cerebral vessels	13	..	13	..	..	..	..	..	..	..	..
29	Heart and cerebral vessels	62	..	11	36	15	..	..	..	..	..	..
30	Heart and kidney	2	..	..	2	..	..	..	..	..	..	..
31	Arteriosclerosis and rheumatic disease	6	..	..	6	..	..	..	..	..	..	..
32	Heart	6	..	..	6	..	..	..	..	..	..	..

I.S.C. means International Statistical Classification.

International Statistical Classification. The major changes may be summarized as follows:

There was an increase in the number of deaths associated with hypertension. Whereas the I.S.C. ascribed 268 deaths, or 10.4 per cent, of the 2,587 certificates to hypertensive disease (the sum of columns 5, 6, 7, and 8) the new scheme shows 572 or 22.1 per cent with hypertension (the sum of lines 17 and 26). This is an increase of more than 100 per cent. Of the original 268 deaths, 234 remained in the hypertensive group, 28 proved unclassifiable, and six were lost from "hypertensive" arteriolar nephrosclerosis—four to arteriosclerosis and two to rheumatic heart disease. The additions to the hypertensive group consisted of 113 from the cerebral vascular lesions, three from nephritis, and three from other diseases of the circulatory system, all of which were associated with hypertension. Also added, were 219 deaths in which arteriosclerotic heart disease was the underlying cause, but in which hypertension was stated to be present.

In 233 or more than three-quarters of the 299 deaths ascribed by the I.S.C. to cerebral vascular lesions, an etiology was stated. With a refinement of the method of classifying certificates bearing two detailed causes in the cerebral vascular lesion group, this proportion would be still higher. For example, there were a number of certificates which bore the combination cerebral hemorrhage and cerebral arteriosclerosis. These should be classified as associated with arteriosclerosis, but in the present analysis were classified as cerebral vascular lesions unspecified (group 01 of the special abbreviated code).

The proportion of deaths not classifiable as to etiology was particularly high in the I.S.C. cause groups involving nephritis (columns 6, 8 and 10). Of the 64 such deaths 47 or 73 per cent were not classifiable. The difficulty reported by clinicians in determining the etiology of chronic nephritis may well explain this finding.

Table 5 points out some of the types of information available from the suggested classification which are not obtainable from the International Statistical Classification. From column 1, Section b of Table 5, it may be seen that 80 per cent of the deaths ascribed to cardiovascular-renal disease showed on the death certificate an association with arteriosclerosis, 22 per cent with hypertension, and 4 per cent with rheumatic heart disease. Approximately 11 per cent were stated to have had both arteriosclerosis and hypertension at the time of death. From Section d of Table 5 it is found that 92 per cent of the deaths in which arteriosclerotic disease was present were stated to have had involvement of the heart, 15 per cent involvement of the cerebral vascular system and 1.5 per cent involvement of the kidneys, as compared with corresponding figures of 82 per cent, 43 per cent and 2.3 per cent among deaths in which hypertensive disease was stated to have been present. Deaths in which hypertension alone was stated to have been present showed higher proportions with cerebral vascular disease and nephritis than did those with arteriosclerosis alone, or with both hypertension and arteriosclerosis.

Discussion

This paper is presented only as an illustration of a rough classification scheme for cardiovascular-renal disease. Present limitations of medical knowledge make it often impossible for the attending physician to determine the exact etiology or the complete extent of anatomical involvement. Since statements on death certificates that specify arteriosclerosis or hypertension as an associated condition may not express a true etiologic relationship, the classification described may appear to be more precise

Table 5—Anatomical Involvement According to Etiologic Diagnosis

Anatomical Involvement (1)	Total Certificates with Cardiovascular-Renal Disease as Underlying Cause	Associated with: Arteriosclerotic Disease: Total	Arteriosclerotic Only	Arteriosclerotic and Hypertensive (2)	Arteriosclerotic and Rheumatic (3)	Hypertensive Disease: Total	Hypertensive Only	Hypertensive and Arteriosclerotic (2)	Rheumatic Disease: Total	Rheumatic Only	Rheumatic and Arteriosclerotic (3)	Indeterminate Etiology
a. Number of Deaths												
All	2,587	2,075	1,791	278	6	572	294	278	100	94	6	134
Heart	2,212	1,915	1,644	265	6	468	203	265	100	94	6	0
Cerebral vessels	545	305	230	75	0	247	172	75	2	2	0	66
Kidney	92	32	30	2	0	13	11	2	2	2	0	47
Not specified	67	49	49	0	0	7	7	0	0	0	0	11
b. Per cent of All 2,587 Certificates												
All	100.0	80.2	69.2	10.7	0.2	22.1	11.4	10.7	3.8	3.6	0.2	4.8
Heart	85.5	74.0	63.5	10.2	0.2	18.1	7.9	10.2	3.8	3.6	0.2	0.0
Cerebral vessels	21.1	11.8	8.9	2.9	0.0	9.5	6.6	2.9	0.1	0.1	0.0	2.6
Kidney	3.6	1.2	1.2	0.1	0.0	0.5	0.4	0.1	0.1	0.1	0.0	1.8
Not specified	2.6	1.9	1.9	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.4
c. Per cent of Totals in Each Line												
All	100.0	80.2	69.2	10.7	0.2	22.1	11.4	10.7	3.8	3.6	0.2	4.8
Heart	100.0	86.6	74.3	12.0	0.3	21.2	9.2	12.0	4.5	4.2	0.3	0.0
Cerebral vessels	100.0	56.0	42.2	13.8	0.0	45.3	31.5	13.8	0.4	0.4	0.0	12.1
Kidney	100.0	34.8	32.6	2.2	0.0	14.1	12.0	2.2	2.2	2.2	0.0	51.1
Not specified	100.0	73.1	73.1	0.0	0.0	10.4	10.4	0.0	0.0	0.0	0.0	16.4
d. Per cent of Totals in Each Column												
All	100.00	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Heart	85.5	92.3	91.8	95.3	100.0	81.8	69.0	95.3	100.0	100.0	100.0	0.0
Cerebral vessels	21.1	14.7	12.8	27.0	0.0	43.2	58.5	27.0	2.0	2.1	0.0	53.2
Kidney	3.6	1.5	1.7	0.7	0.0	2.3	3.7	0.7	2.0	2.1	0.0	37.9
Not specified	2.6	2.4	2.7	0.0	0.0	1.2	2.4	0.0	0.0	0.0	0.0	8.9

(1) Heart includes heart alone, heart and cerebral vessels, heart and kidney, and heart, cerebral vessels and kidney.
Same combinations for cerebral vessels and for kidney.
(2) Arteriosclerotic and hypertensive appears in both arteriosclerotic and hypertensive disease.
(3) Arteriosclerotic and rheumatic appears in both arteriosclerotic and rheumatic disease.

than is the medical diagnosis itself. While more detailed study is necessary before the proposed plan could meet acceptable medical and statistical criteria for general application, it appears to present certain advantages which merit its further exploration as a supplement to the current system.

The consumer, who usually knows little about the International Statistical Classification and less (or nothing) about the coding rules for selecting a primary cause of death, would not be likely to misinterpret the meaning of the major subdivisions of cardiovascular-renal disease statistics. Moreover, he would find answers to far more of his questions than are at present available.

If a classification such as is suggested in this paper could be developed, rules for coding would be simple since the system of arbitrary priorities of terms could

be replaced by a logical description of the underlying disease process and anatomical involvement. The vital statistician would not be expected to decide whether one or another etiology or anatomical involvement is more important as a cause of death when the physican has not made that decision in his medical certification.

The certifying physician could be encouraged to describe a patient's disease on the death certificate in the same way that he does in clinic and hospital records. Cardiologists are skeptical, and rightly so, of the value of the cause of death information on the death certificate, but they might be influential in effecting its improvement if they were teaching medical students to express the cause of death in the same terms they use to describe the clinical disease.

Mortality statistics would be provided that could be related more readily to figures from morbidity studies than can those under the conventional scheme. Much of present cardiovascular research is directed to developing tests which will detect hypertension and arteriosclerosis in the early stages, before organic dysfunction is apparent. As a result, follow-up studies which attempt to determine prognosis or predisposing factors in the development of hypertensive and arteriosclerotic disease would find a classification such as is suggested in this study or a refinement of it, more useful than the conventional International Statistical Classification.

Public Health Group Visits Germany

In an exchange program organized by the Federal Republic of Germany, a group of physicians and other public health experts left New York in February for visits to Bonn, Dusseldorf, Hamburg, Wiesbaden, Frankfurt, Stuttgart, Munich, and Berlin.

The group was made up of Webb Haymaker, M.D., chief, Neuropathology Section, Armed Forces Institute of Pathology, Washington, D. C.; Henry R. O'Brien, M.D., Public Health Service, Washington, D. C.; George T. Palmer, Dr.P.H., Division of Administration, California State Department of Public Health, San Francisco; J. Mather Pfeiffenberger, M.D., Alton, Ill.; Robert L. Simmons, M.D., Department of Public Health and Preventive Medicine, Louisiana State University, New Orleans; Wilson G. Smillie, M.D., Department of Public Health and Preventive Medicine, Cornell University Medical College, New York; Dewitt H. Smith, M.D., Princeton, N. J.; and Clair E. Turner, Dr.P.H., National Foundation for Infantile Paralysis, New York, N. Y.

American Journal of

PUBLIC HEALTH

and the Nation's Health

Official Monthly Publication of the American Public Health Association, Inc.

Volume 45 April, 1955 Number 4

The Bookshelf in Nutrition

In the well established tradition of timely service, the Journal presents in this issue an annual review of the literature and resource material in a selected area of broad significance to public health. The selection this year, "A Bookshelf on Foods and Nutrition," should be of interest to workers in all fields of public health. The physical, mental, and social development of the infant and child cannot follow a normal course without provision for food that is adequate in quality and quantity to meet the body's need. These factors probably condition the productiveness and social development of individuals through the entire life-years.

This area of public health activity is relatively new and is characterized by intensive research. Recent discoveries are of prime importance. Misinformation and lethargy continue to penalize the public as a result of practices now inexcusable. Current research is making frequent contributions to improved practices in the treatment of disease and in accelerating convalescence. In addition, striking advances are being made in disease prevention.

If patterns of food consumption are to be adequate for purposes of health, concerted efforts are required in nutrition education, in food technology, and in the production of foods with maximum potential in public service. The challenges and opportunities to link research with practice are great. Information—including a new APHA monograph shortly to be available—will assist and guide in determining policies and in the framing of public health programs. The Bookshelf is a practical and valuable addition to the series.

Progress in Mental Hygiene Research

Research problems in mental hygiene involve so many different factors, sociological, anthropological, ethical, as well as medical, that clear-cut evaluations of research in this broad field are extremely difficult to make. The researcher himself is continuously thwarted by the fact that he cannot avoid the use of his clinical judgment as one of the criteria in testing hypotheses. The subjective nature of

judgments is a fact of which the psychiatrist is perhaps more aware than are other scientists less trained in observing the forces that warp judgment as it is used in the functions of daily living, including research activities. In spite of the difficulties, progress is being made, by discovery of new treatments and by the discernment of psychological and physical factors of importance to the healthy personality.

The factor of social isolation, as important in personality development and in the development of some psychiatric syndromes, is of peculiar significance, since it appears to function at many different age levels. Bowlby has summarized the data on infancy and childhood in his "Maternal Care and Mental Health" published by the World Health Organization. Hebb has reported experiments showing that healthy young adults will hallucinate if deprived of sense perceptions. Rioch and others have noted the nonreactive confused state that appears in prisoners of war who are denied social intercourse with their fellow prisoners because of suspicion that one or another may be informers. Gruenberg has noted that socially isolated older people must be hospitalized because of psychotic developments at a higher rate than those not so deprived.

Obstetrical complications as a factor in the etiologic complex of some behavior disorders, including epilepsy, cerebral palsy, mental deficiency, and school behavior problems have, through the recent work of Pasamanick, Lillienfeld, and Rogers, appeared as important in the future reduction of incidence of some of these disorders. These and other studies have led to the concept of pregnancy wastage, a hypothesis that allows the integration of many previously isolated observations into a confluent theory of considerable usefulness in the design of further research.

In the treatment field the Rawolfia drugs and thorazine are in the forefront of interest. These drugs appear to lower the state of tension in patients and to result in improvement in some serious psychiatric illnesses. Coupled with the recent intense study of drugs such as lysergic acid and others known to induce psychopathological responses, the study of these substances is bringing new understanding to the pathology of schizophrenia, the greatest unsolved problem in medicine today. Experimentation to determine the best uses of electroshock and brain operations for the symptomatic relief of psychiatric patients continues.

The evaluation of psychotherapy and preventive efforts depending on learning and the changing of attitudes is being recognized as the central research problem in mental hygiene. The principles of biostatistics and epidemiology are being applied to this field as far as present limitations of knowledge and of trained research personnel will allow. Group therapy and the psychologic treatment of schizophrenia are under particular evaluative scrutiny. Better reporting of outpatient clinic activity, and particularly of community mental health educational ventures, is being developed as a base line for further studies that may lead to dependable evaluation.

Mental hygiene research is not standing still. Its problems are multifactorial and dogged by the need to use judgment as an instrument in research. Basic data are being collected, however, and some general integrating hypotheses are emerging to aid in experimental design. Other commentators would undoubtedly select other areas to demonstrate the progress being made, but all would agree that there is a healthy state of dissatisfaction with the present status and be encouraged by the amount and increasingly sound data that are appearing.

(The Journal is indebted to Paul V. Lemkau, M.D., professor of public health administration, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md., for assistance in the preparation of this editorial.)

Man and Chemicals—Poisoning Control Programs

The frontiers of public health are constantly undergoing change and realignment in consequence of developments in the scientific and economic spheres. Advances in chemotherapy, antibiotics, sanitation, and immunization have made tremendous strides against the epidemic and endemic prevalence of many of the bacterial and viral diseases that have plagued mankind for ages. On the other hand, new discoveries and inventions in the fields of mechanical and chemical engineering have resulted in greatly increased health hazards from accidental injury and poisoning.

At no time in the history of this country has there been a wider use of a greater variety of natural and synthetic chemicals and their allied products by the farmer and the housewife. A generation ago chemical hazards in the average household were limited largely to lye and kerosene. Now there are thousands of detergents, insecticides, rodenticides; an unlimited supply of solids, liquids, and gases to remove odors, kill mice, clean windows, wash dishes, put out fires, curl hair, remove paint, etc. Since 1940 the output of the chemical industries has increased fivefold, with the most extensive growth in the production of agricultural chemicals, plastics, synthetic fibers, drugs, and detergents. Fatalities and acute injuries from chemicals unheard of 20 years ago are common today. A few years ago the American Academy of Pediatrics sent questionnaires on accidental poisoning to some 3,500 practicing pediatricians. About 1,370 accidental poisonings due to chemicals were reported by those replying and approximately half the physicians involved expressed the opinion that accidental poisoning was a problem of major concern. It was apparent both from this survey, and from a later review of the causes of deaths due to accidental poisoning in the United States by Katherine Bain, M.D., of the U. S. Children's Bureau, that household chemicals such as disinfectants, pesticides, and various medications were largely responsible for accidental poisoning among children.

This public health problem is controllable. Deaths may be reduced where an active and vigorous public health campaign is waged. An illustration of such reduction is afforded by the "1080" control program of the New York City Health Department. Sodium fluoroacetate (compound 1080) was developed in 1944. It came into commercial use in 1946 and in the next year and a half caused the death of eight children. A limited control program was set up in New York City, but this was not enough. In 1950 following the death of a 20-month old child by "1080," regulations were tightened and the use of the chemical rigidly controlled. Since then no deaths have been reported from this substance in the city. It is still in use but is under strict regulations.

The health department can play an essential role in helping to control the poisoning problem. One of the important ways this can be achieved is for the departments to participate actively in the development of poisoning control centers. Such a center has been in operation in Chicago for over a year and, more recently, Boston, New York City, Phoenix, Washington, D. C., and other cities have developed similar centers.

These centers provide a valuable service to the medical and allied professions, since it is almost impossible for any one physician to be continuously aware of the toxic constituents in thousands of household substances that may be poisonous. These centers can form an integral part of a well rounded program of poisoning control. In addition to the more rapid and effective treatment measures that may be expected from them, major dividends can be obtained in the sphere of prevention.

The significant epidemiologic data obtained, especially if supplemented by direct health department follow-up and coordinated action, can form the framework upon which an effective community program can be molded. Such a program should utilize the resources in hospital, medical, nursing, pharmacy, and allied fields, as well as enlisting all the usual media of communication in a broad program of health education for both professional and lay persons. Thus, the benefits of the tremendous advances in chemistry can be enjoyed while the hazards are greatly minimized.

(The Journal is indebted to Jerome B. Trichter, assistant commissioner, City Health Department, New York, N. Y., for assistance in the preparation of this editorial.)

How Good Are Our Practices?

The people want to know what the score is in respect to their public health services. When they do understand the services in detail and know their strengths and weaknesses things are very apt to happen. Most of the time these happenings will result in better health services, provided there is the kind of leadership and direction which make this possible. Evaluation of public health practices is an urgent and difficult problem. Evaluation which is designed to get action is best done by citizens and professionals jointly accepting full responsibility for the stewardship of the moneys available. Self-survey is the term now often used. Four papers in March * provide rich analyses of specific instances and of "The Problem of Research and Social Action." It is predicted that each experience will provoke constructive discussion among health department staffs, if given the opportunity, and that individual readers will be stimulated to further reading and exploration. The Committee on Administrative Practice particularly commends these several approaches to better public health services. The committee now has available for trial and further development a Community Guide for use by citizens in self-surveys. The Evaluation Schedule, which has stimulated a great deal of appraisal in the last 10 years, is now in need of revision, both in its technical aspects and in the technics of the fuller participation by citizens. The approaches outlined in that issue are current instances in the evolution of appraisal methods. This is a major concern of the Committee on Administrative Practice.

(The Journal is indebted to Roscoe P. Kandle, M.D., deputy commissioner of health, City Health Department, New York, N. Y., for assistance in the preparation of this editorial.)

* Symposium on Community Self-Surveys in Health. A.J.P.H. 45, 3:273–284 (Mar.), 1955.

A COMMITTEE REPORT

Research Problems in Maternal and Child Health and Child Development

Committee on Research and Standards

I. Function of the Ad hoc Committee

The function was to consider problems in the field of maternal and child health and child development, in which of these the Research and Standards Committee should concern itself, and how interest might be stimulated in research in these projects.

Formation of the Ad hoc Committee of the Research and Standards Committee had been stimulated by receipt of a memorandum from Harold Stuart, M.D., of the Harvard School of Public Health. In this statement the author had pointed up the need for research in these broad fields and particularly the need for continuing longitudinal studies of children.

II. Procedure Followed by Ad hoc Committee

A considerable number of individuals working in maternal and child health and related fields were contacted with a view to obtaining from them a statement concerning the areas in MCH and child development in which they felt research was needed. Those contacted represented local, state, federal, and international health agencies, as well as university and private foundations. The replies were tabulated, analyzed, and edited. The results are presented in the following sections.

III. Classification of Research Areas

A listing of specific and detailed research problems in the field of maternal and child health, comprehensive as its scope may seem, runs the risk of forcing research into predetermined channels, as well as that of rapid obsolescence. On the other hand, too many broad generalizations in terms of over-all areas that need development do not provide the kind of definitive guidance that is being sought here.

A classification system for research needs on a functional basis, yet including a more conventional, substantive breakdown was a compromise. The proposed statement that follows, therefore, should never be used to exempt or preclude the inquisitiveness of an investigator into an area or problem not specifically mentioned therein.

The types of research needed can be classified into three broad areas as follows:

A. Studies of research methodology.

B. Longitudinal and cross-sectional studies of child growth and development, including the preconceptional and prenatal periods of methods so as to provide basic truths which can be used in clinical medicine as well as in public health programs.

C. Administrative studies to improve efficiency in rendering health services to the child and the mother based upon both current knowledge and future information learned from studies such as those in categories A and B. Efficiency of a program or service should be measured not only in terms of efficacy, but also side effects, considerations of cost, and expenditure of human effort.

IV. Discussion of Studies in Research Methodology

There is a real need to promote research in this area since methodology is the foundation for building up the eventual success of studies in B. and C. It should be borne in mind, nevertheless, that no administrator will, nor can he afford to, encourage this type of research in a service organization because of its abstract philosophical nature with little immediate applicability. Universities cannot engage in such research by themselves owing to the need for subject material and some type of field personnel. Research and methodology then becomes a challenge for those who are interested in promoting research to bring together these two groups so as to integrate their skills and facilities for mutual benefit.

Some specific areas where research on methods can and should be promoted would include the following ones:

1. Methods for the most efficient scientific diagnosis of a community to determine indexes that measure the needs for a program.

2. Methods for evaluation of the effectiveness of programs in terms of the basic purposes. This should include not only new services to be performed, but also an appraisal of many conventional and standardized current practices. Examples: child health conference, prenatal care, crippled children's programs, and school health programs.

3. Methods for measuring the quality of work performed by professional personnel.

4. Methods for the design, conduct, and analysis of longitudinal studies, including the preconceptional and prenatal periods. In this connection, three points merit emphasis. The first is the need to utilize the skills and knowledge of the social scientists to learn more about social conflicts and such causal relationships which these pressures may have upon morbidity in this area. The second point to be stressed is the need for more research on the efficient analysis of the results of long-term longitudinal studies. In too many instances valuable data have been wasted by failure to extract the full potential from available records. Finally, more research is needed to know what kinds of problems are best approached by longitudinal studies and which questions best can be answered by cross-sectional ones.

5. Development of uniform measures of children's health status to serve as a basis for school health studies.

6. Methods for applying modern statistical technics and tools in the solution of problems in this field. More use should be made of sampling theory, sequential procedures, and multivariate analysis.

7. Standardization of nomenclature for studies of complications of pregnancy, causes of fetal deaths, and childhood morbidity.

V. Discussion of Longitudinal and Cross-Sectional Studies

Some illustrative examples, not necessarily in order of preference, are quoted.

1. The etiology of congenital malformations involving a detailed longitudinal study embracing the preconceptional and prenatal periods and including data on social factors.

2. Epidemiology, including incidence, of the fetal and neonatal wastage involv-

---

Report of the Ad hoc Committee.

The analysis made by Sidney S. Chipman, M.D., and Bernard G. Greenberg, Ph.D., impressed the Committee on Research and Standards not only by the recommendations made, but also by the method used. The Committee on Research and Standards recommended publication of the report in the hopes that it might stimulate discussion and comment. Any comments with reference to the report should be directed to Dr. Greenberg, University of North Carolina, School of Public Health, Chapel Hill, N. C.

Malcolm H. Merrill, M.D., Chairman

ing similar longitudinal studies as No. 1 above and including information on pathologies as well.

3. Epidemiology of communicable diseases in groups of children, particularly when placed in day camps, nursery schools, etc.

4. Epidemiology of accidents among mothers and children and studies on methods of accident prevention.

5. Mental health implications of specific procedures in public health programs and medical care.

6. Studies on optimum age of readiness of children for different types of treatment and varying traumatic effect of treatments at different stages of maturation of the child.

VI. Discussion of Administrative Studies

As in the foregoing, illustrative examples are given without any order of priority.

1. Studies to clarify and delineate the respective functions of different professional disciplines working in a common program under varying circumstances, for example, the physician, nurse, social worker, nutritionist, and health educator. When several disciplines work together as a close team rather than merely as parts of the same program, what are the problems and machinery for harmonious and efficient working together? Example: A multidisciplinary diagnostic team or rehabilitation unit.

2. Studies to improve the technics of staff training, both preservice and inservice.

3. Studies to produce more effective coordination of health supervision of well children and care during illness when given through different auspices. Examples: The child health conference and the school health program.

4. Studies to develop more efficient screening methods to detect health defects. Example: Rheumatic fever among school children.

5. Studies to analyze job duties into professional, subprofessional, and nonprofessional levels for development of auxiliary personnel and freeing of professional personnel for more difficult tasks.

$100,000 California Smog Study

With an allocation of $100,000 from emergency state funds by Governor Knight, the California State Health Department has begun a study of air pollution in the state with particular reference to Los Angeles smog. Lester Breslow, M.D., chief of the Bureau of Chronic Diseases, has been temporarily assigned to carry on this study with the assistance of a special team of physicians, engineers, statisticians, and expert consultants.

Definitive information is being sought on the nature of air pollution, its extent, its sources, its effects on health and environment, remedies, and legislation, both existing and needed. In reporting the study, California's Health says "The probe into the effects of smog upon public health is virtually a pioneering project, since the bulk of previous research has been devoted to the nature and control of air pollution."

One of the important phases of the study is a consolidated summary, reportedly for the first time, of all information that has been gathered on air pollution in the state over a period of years by government and private research projects.

Clearing House on Public Health Salary Information and Personnel Needs

The Fifth Local Salary Study

The fifth study of salaries of local public health workers in official agencies was released by the Public Health Service in February. In addition, data on nurses' salaries in nonofficial health agencies and in boards of education have been furnished by the National League for Nursing. For three years these studies were made annually in 1948, 1949, and 1950. The fourth study was made in 1952, and the most recent study is as of August, 1954.

Schedules for reporting salaries were sent to a total of 629 local health departments, of whom 564 replied, representing a 90 per cent return. Of the total replies, 48 were from departments serving populations of from 250,000 to 500,000 and 34 from departments serving over 500,000. The remainder served populations of between 50,000 and 250,000. The National League for Nursing returns were from 75 per cent of the local nonofficial health agencies and 66 per cent of the boards of education.

The number of persons involved in these studies is over 22,000 of whom more than half were staff nurses. Including nurse directors, supervising nurses, and clinic nurses, nurses total 60 per cent of all public health workers included in the current salary report. Sanitarians and other sanitation personnel except sanitary engineers made up nearly one-fourth of the total (Table 1).

Table 1—Number of Workers Included in the Salary Study and Number of Local Health Departments Reporting Workers, by Occupational Group

	Number of Workers	Number of Units Reporting
Total	17,955	564
Medical Health Officers	448	448
Public Health Physicians	494	110
Public Health Dentists	194	80
Environmental Sanitation Personnel, Total	5,809	..
Sanitary Engineers	356	185
Sanitarians	3,623	498
Other	1,830	205
Veterinarians	244	102
Professional Laboratory Workers	949	223
Public Health Nurses, Total	9,595	..
Supervisors	1,246	407
Staff	7,900	536
Clinic	449	145
Health Educators	222	134

Nurses reported in other than local health departments totaled 4,274 classified as follows:

	Total	Nonofficial Health Agencies	Boards of Education
Total	4,274		
Directors	149	Not Classified	
Supervisors	265	200	65
Staff nurses	3,860	2,125	1,735

The number of workers covered by these studies has increased year by year. The first two included fewer than 4,000 workers; the 1952 study, when information was first secured in population units of more than 250,000, included nearly 16,000 workers in local health departments and nearly 5,000 nurses in nonofficial health agencies and boards of education.

It will be noted that no single occupational group was reported by every one of the 564 departments reporting (Table 1). Ninety-five per cent reported salaries for staff nurses, 88 per cent for sanitarians, 79 per cent for health officers, and 72 per cent for supervising nurses. Fewer than 40 per cent of the departments reported salaries for the other eight occupational classifications. Fewer than one-third reported on sanitary engineer salaries; fewer than one-fourth on health educator salaries; fewer than one-fifth on public health physician salaries. It must be remembered that this does not represent the extent to which professional services of the various categories, particularly medical and dental, are made available by the 564 departments.

As an example, health educators were reported by only 32 states and the District of Columbia. Of these, the salaries of fewer than five educators were reported in 20 states, of fewer than 10 in six states, and of more than 25 in only two. With respect to public health physicians (other than health officers), nearly 40 per cent whose salaries were reported were in two states that pay among the highest public health salaries.

For seven occupational groups that have been included in each of the four previous studies, Table 2 shows the extent to which median salaries have increased in the seven-year period covered by the studies. Salaries of staff nurses and health educators show the smallest percentage increase, 31 and 37 per cent, respectively. Median annual salaries of

Table 2—Percentage Increase in Median Annual Salaries 1948–1952 and Between Years of Salary Studies, Seven Occupational Groups, Local Health Departments Serving Populations of 50,000 and Under 250,000

Occupational Group	May, 1948–August, 1954	April, 1952–August, 1954	April, 1950–April, 1952	April, 1949–April, 1950	April, 1948–April, 1949
Local Medical Health Officers	47	14	9	7	10
Sanitary Engineers	50	13	11	12	7
All Other Sanitation Personnel	44	14	11	4	9
Professional Laboratory Workers	47	17	13	−2	13
Supervising Nurses	43	9	15	4	9
Staff Nurses	31	6	12	4	6
Health Educators	37	15	4	6	8

sanitary engineers increased by 50 per cent. In each of the seven groups increases took place between each study period, except in the case of laboratory workers. Here there was a 2 per cent decline between 1949 and 1950, but for the whole period median salaries for this group increased 47 per cent.

Among the six occupational groups for which salary data were first included in the 1952 study, median salaries have increased from 10 to 20 per cent in the two-year period.

Although no spectacular rises are shown in the over-all median figures, there is evidence of a continuing rise in salaries. For example, among the 448 local health officer salaries reported in 44 states and the District of Columbia, 60 in 16 states were reported to be $12,000, or more, and 13 in five states $15,000, or more. One health officer in each of two states was reported with an annual salary of more than $20,000. In 1952 only 25 were reported receiving $10,000, or more.

Among 356 sanitary engineers, salaries of 26 in 14 states were reported to be $8,000, or more, and one $10,000 salary was reported. In 1952 only 10 sanitary engineers in six states were reported with salaries of $8,000, or more. No $10,000 salary was reported.

Salaries of nearly one-fourth more health educators were reported in 1954 than in 1952. In the most recent study, 22 health educators in 10 states were reported with salaries of $6,000, or more, three of them with salaries of $8,000, or more. In 1952, 12 were reported with salaries of $6,000, or more.

The Public Health Service has decided that for the immediate future, at least, it will no longer make these salary studies, either for local or state public health personnel. Seven annual state studies were made for each of the years 1947–1953. Whether the Association of State and Territorial Health Officers and the Committee on Professional Education of the American Public Health Association, the two other sponsoring agencies, will continue them in some form is for the future to decide. In the meantime, the raw data of the most recent study have a wealth of useful material that can be utilized. Since there are separate schedules for each of the 564 health departments participating in the study, figures could be isolated for any of the occupational categories in any type of jurisdiction, state or population-wise, urban or rural, number of personnel, and other factors.

If the studies are resumed, past experience indicates the following as some of the factors to be considered:

a. Reporting salaries separately for the various grades in each occupational group.

b. Reporting ranges of salaries for the various grades of jobs, i.e., entrance and maximum salaries, in addition to salaries currently paid.

c. Publishing less detail in simpler form in the interest of speedier and more precise material.

d. Reporting data separately for the metropolitan cities of more than a million population.

e. Inviting more extensive use of the data for replies to specific queries, as for example, a county and city of 100,000 population that needs figures from several jurisdictions comparable in size, section of the country, and type of program.

This seven-year exploration of local and state public health salaries has developed a body of useful information and has undoubtedly helped in focusing the attention of personnel and appropriating bodies on the need to bring public health salaries into line with those for comparable professional positions. Public health workers throughout the land owe the Public Health Service and the many local health departments that shared in this endeavor a debt of gratitude.

Kenfield Memorial Scholarship

The American Hearing Society is receiving applicants for the 1955 Kenfield

Memorial Scholarship, an award made annually to a prospective teacher of lip reading. The winner is entitled to take a teacher training course in lip reading from any school or university in the United States acceptable to the Teachers Committee. The scholarship is to be used within one year from the date of award. Completed applications must be returned by May 1 to Dorothy J. Cornett, 4310 S. W. 14th St., Coral Gables 34, Fla. Application blanks and further information from the national headquarters, 817–14th St., N. W., Washington 5, D. C.

Sanitary Engineering Assistantship

The State College of Washington has available several graduate assistantships, leading toward a master of science degree in sanitary engineering. These involve half-time research during the academic year, with full-time research during the summer. Further information from Professor Emmett B. Moore, Chairman, Department of Civil Engineering, State College of Washington, Pullman.

Engineering Education Thoughts

The first 1955 Quarterly Report of the Carnegie Corporation returns to the subject of the place of the humanities in engineering and other technical education. "It is necessary that the ideals of a liberal education be carried to every institution of higher education, no matter how special or technical its character may be."

Apparently to carry out that principle, the Carnegie Corporation is providing some support for "programs designed to broaden and enrich their nontechnical course offerings at four of the nation's technical institutions—California, Carnegie, Case, and Massachusetts Institutes of Technology. The article describes the differing programs in the four schools, all however "concerned with insuring that the highly selected young men who gain admission to our technical schools shall not be cut off from the full richness of their own cultural heritage or deprived of the broad and deep education which our society demands of its ablest men."

One dean points out that mere courses in the humanities even though interestingly taught are only "a decorative mistletoe." What is essential is that they "should be so taught that, while gaining deep understanding of humane and social values, the student learns from practice how to deal with human, social and professional problems by using a common, orderly, and self-reliant method of thought."

Medical Social Work Fellowships

Public health agencies in four states, the Children's Bureau, and six schools of social work are collaborating in a Medical Social Education Project designed to train medical social workers for public health programs. Under this project, Medical Social Work Training Fellowships with stipends ranging from $2,250 to $2,500 are announced.

Fellowships are available to citizens of the United States and its territories who have successfully completed one year of graduate work in an accredited school of social work and who are interested in a career in medical social work in a public health program or in the teaching of medical social work.

In Massachusetts the State Health Department is the sponsoring agency and training may be obtained in any one of three schools of social work in Boston, those of Boston College, Boston University, and Simmons College.

The Louisiana State Health Department sponsors a program at Tulane University, School of Social Welfare (New Orleans 18).

In Illinois, sponsorship is provided by the University of Illinois, Division of Services for Crippled Children, and training is provided by the University of Chicago, School of Social Service Administration (Chicago 37). The programs in these three states have been in effect since the end of World War II.

In California the program, in its first year, is administered by the School of Social Welfare of the University of California (Berkeley 4) in close cooperation with the School of Public Health and the State Department of Public Health. Here, alone among the four programs, the program provides for an additional year of supervised internship in a public health setting. This second year's stipend is $3,600.

Applications and requests for specific requirements of each training project should be made to the dean of any one of these schools of social work.

Sanitation Fellowships at Rutgers

Rutgers University announces graduate research fellowships for the academic year 1955–1956. These are open to residents of the United States or Canada with bachelor's or master's degrees and with training in one or more of the sciences related to public health. The annual stipend begins at $1,716 and there is no tuition for course work. Appointments are made for July 1 and September 1.

Applications should be made as early as possible to Dr. Harold E. Orford, Chairman, Department of Sanitation, Towers Building, Rutgers University, New Brunswick, N. J.

"The Children's Bureau is one of the few Federal agencies organized strictly on the basis of clientele. Founded in 1912 in a reform era, the Bureau has operated with dedication and with outstanding success. In 1946, when it was transferred from the Department of Labor to the Federal Security Agency (predecessor of the new Department), it was placed within the Social Security Administration.

"We conclude that the Children's Bureau does not logically belong in the Social Security Administration for it has important duties outside the welfare field. On the other hand, the work of the Bureau has been so satisfactory and its focus on the whole child so desirable that its functions should not be split among other constituent agencies of the Department.

"We believe that the Bureau should be continued intact, and elevated to a point where the Bureau Chief has access to the Secretary. We also favor giving the Bureau authority and appropriations to make research grants."

(From Report on Federal Medical Services, Prepared for the Commission on Organization of the Executive Branch of the Government by the Task Force on Federal Medical Services, February, 1955.)

Credit Lines

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to the addresses given.

Brochure on Healthier Children

"Rx for Healthier Children," a brochure of the Health Information Foundation, is subtitled "How We Can Improve Our Poor Record for Correction of Health Impairments Found in School Physical Exams." A handsome document in some 20 pages, it has useful suggestions for what schools, physicians, parents, and community groups can do. The initial distribution included secretaries of county medical societies, councils of social agencies, public school superintendents, and presidents of Parent-Teachers Associations. It would also be useful to local health officers who in many areas have responsibility for school health services.

National distribution is limited, but single copies are promised "for use by people having key relationships to school physical examinations." Health Information Foundation, 420 Lexington Ave., New York 17, N. Y.

The Chronically Ill Are Persons

"Chronic Illness" is the title of a report, by the Subcommittee on Chronic Illness of the American Association of Medical Social Workers, which places emphasis on the individuality of the needs of ill persons. In straightforward, simple language and with down-to-earth realism, it serves "to focus increased attention on the social and emotional implications of chronic illness and to describe some of the outstanding social problems, related to chronic illness, which confront ill people, their families, professional groups and the community." This 17-page report is a useful refresher for all public health workers.

The health officer who is trying to convince his local board of the need for a medical social worker will find the section on the contribution of this health team member particularly helpful.

American Association of Medical Social Workers, Subcommittee on Chronic Illness, Washington, D. C.; 75 cents.

Finding Films for Every Purpose

The Film Council of America has recently produced "A Guide to Film Services of National Organizations." The guide is described as "the first major attempt in this country to compile and publish for general use information on the film services of national associations." It is intended to answer such questions as what journals publish news and reviews of 16 mm films, what film services are offered by nonprofit agencies on various subjects, health and medicine, for example.

There are six types of indexes—alphabetic, subject, publications, periodicals, personnel, and geographic. A brief description of 134 organizations is included giving such information as membership, purpose, activities, publications, personnel, among others. Of the 134, at least 10 per cent have film activities in the health field.

Also published at the same time by the Film Council is "Sixty Years of 16 mm Film, 1923–1983." This symposium by 22 authors discussing eight separate topics says, "It seemed appropriate that on the 30th anniversary of the 16 mm film the medium be honored by a volume summarizing its past and anticipating its future." The foreword further confesses that data necessary for

a truly definitive work are not available, but suggests the present volume as a guide to further observations and a stimulant for research. The chapter headings indicate a discussion of the history of the 16 mm film, its uses in education, in industry, on the farm, in churches, libraries, museums, government, its world aspects, and criteria for selection.

The Film Council of America is described as "a nonprofit educational corporation organized to promote the production, distribution, and utilization of audio-visual materials primarily on the adult level." 600 Davis St., Evanston, Ill. Each volume, paper cover, $2.

Glaucoma Survey in Cleveland

"About two per cent of the adult population have undetected glaucoma and twelve per cent of adult blindness in the United States is caused by glaucoma." This introduces the brief but exciting story of "Operation Glaucoma" in Cleveland, as a result of which 240 persons who had not known of the threat to their vision are now under treatment. This is an invitation to alert health officers. "The Cleveland Glaucoma Survey," Benjamin J. Wolpaw, M.D., and Allan W. Sherman, M.A. Sight-Saving Rev. XXIV (Fall), 1954, p. 139.

A Great City's Social Resources

The new biennial directory of "Social and Health Agencies of New York City" 1954–1955 has just been published. It is larger than the previous edition by some 40 pages. In its 600 pages are included a description and listing by classification, as well as an alphabetical listing of 1,100 governmental and voluntary welfare and health organizations. Civic, educational, and religious organizations that also offer services in the social work or closely related fields are included. The volume is prepared for the Welfare and Health Council by the Columbia University Press under the direction of the Committee on Information Services. Columbia University Press, 2960 Broadway, New York, N. Y.; $6.

Worth Acquiring

"TV: Learning to Use It" is subtitled A Resource and Guide for Workshops. It is published by the Council of National Organizations of the Adult Education Association, designed to "be useful for everybody who is active or plans to be active in using television for education." This is done by setting "forth the ideas, techniques, information, and resources that were found most useful in a workshop concerned with the use of television for educational purposes." The workshop in question, "the first national training television workshop for key leaders of national organizations," was held in Toledo in April, 1954. It was preceded by a pilot workshop in Los Angeles the previous year.

One of the chapters in the guide is "Where to Turn for Help" which includes a list of national and local organizations and materials. The secretary of the executive committee of the joint organizations is Ruth E. Grout, Ph.D., associate professor, University of Minnesota School of Public Health, who represents the American Public Health Association.

The guide is available from the Council of National Organizations, Hotel Shelburne, 303 Lexington Ave., New York 16, N. Y.; 50 cents.

"The Retarded Child" and "Gains for Handicapped Children" are recent Public Affairs Pamphlets that have relevance for public health workers. Along with these new ones the Public Affairs Committee calls attention to one of its earlier publications, "Rheumatic Fever." Public Affairs Pamphlets, 22 East 38th St., New York 16, N. Y.; 25 cents each.

Books and Reports

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

Health Careers Guidebook—Zilpha C. Franklin. Published by the National Health Council and Supported in the Public Interest by the Equitable Life Assurance Society of the United States. New York: Health Careers, Box 1400, New York 1, 1955. 156 pp.

Partners for Health. The general chapters of the Guidebook in a separate pamphlet. 40 pp.

This brilliantly conceived and executed brochure intended for the vocational guidance of high school seniors can be viewed most advantageously through the larger frame of the nation-encompassing enterprise of which it is the visible, tangible first product. The National Health Council's "Health Careers Project," to which so many professional organizations and their individual members have contributed many months of productive effort, is an undertaking possessing a high potential for raising the caliber of service throughout the entire health field. Its purpose is clear in its title. Inevitably the question arises, can any single educational tool, however intelligently it may be fabricated, ever accomplish all that may be expected of it?

Some of us who can look back to a far distant childhood can remember the day when it was the settled ambition of every real boy to drive a three-horse-hitch fire engine. A later generation among us remembers, in its youth, the determination of almost every small boy to become an airplane pilot. For most youths, more rational decisions slowly altered plans for the coming life work, but a high emotional component in the choice of our careers was never quite dissipated. Who will say that it no longer influences decision?

A finely adjusted, true, and useful balance between appeals to emotion and to reason seems to be the distinguishing mark of the brief "Partners for Health" which opens the eyes of the senior high schooler to the immense variety of opportunity in the public health field. And this balance becomes more clearly evident in the larger "Health Careers Guidebook" which will be available for reference in each high school. The conception, the working out, and the production of both these guidance tools are magnificent.

Initial credit for the entire enterprise must be accorded to the National Health Council, its Project Committee, and to the Equitable Life Assurance Society which not only underwrote the project but contributed greatly to it through the company's able and distinguished staff. Advisory Committees of the National Association of Secondary School Principals and the National Guidance Association are credited by the Health Careers Project Committee for continuous help throughout the entire venture. But the "Briefings," the detailed discussions of the 156 health career opportunities, are the product of the collaboration of more than 50 professional groups credited as "Participating Organizations" and named as "sources of further information." One may hope that the promised help of these organizations will prove to be as humanly warm and as patently useful as that given in the Briefings. A cold, form letter offering a vague, "double-talk" leaflet would chill the enthusiasm of the youthful seeker after more information. About the 156 Health Career Briefings it can be said only that they describe with rare accuracy, and in readily comprehended

terms, more individual careers than most of us "old-timer" health people are aware of. The job of career promoting is amazingly well done. It must be admitted that in doing this the "best foot" seems usually to be "put forward." But, when all is said, the best public health foot is a pretty good one.

RAYMOND S. PATTERSON

Cultural Difference and Medical Care. The Case of the Spanish-Speaking People of the Southwest—By Lyle Saunders. New York: Russell Sage Foundation (505 Park Avenue), 1954. 317 pp. Price $4.50.

This book has been written with two purposes in mind. One is to present information about the Spanish-speaking people of the American Southwest which may be of use to physicians and other health personnel working with this population group. The other is to use the relationships of the Spanish-speaking group with the English-speaking people among whom they live to illustrate some highly significant points about the interrelations of medicine and other elements of culture. In this connection the author's intention is to characterize the distinctive culture of the Spanish-speaking group and to show how it determines their behavior with regard to health.

The points stressed are: (1) medical practice is a social activity; (2) medicine is a part of culture; (3) when medical practice involves the application of elements of the institution of medicine in our culture to people in another, or to members of a subculture within a group, the healers and patients may not fully understand or correctly evaluate each others behavior; and (4) when healers have to treat persons of a very different culture group, the probability of a mutually satisfactory physician-patient relationship will be increased if the healer has an awareness of the cultural differences and how they influence behavior on both sides of the relationship. These points are discussed and illustrated in the six chapters that comprise the book.

In general, Saunders has accomplished his purpose. However, while the subject of this study is a culturally distinct population, a good part of the behavior described is not distinctive of the group because of its culture. Instead, the behavior stems rather from the changing situations to which the group must adapt itself. For example, numerous behavioral observations can be explained by the fact that the Spanish-speaking people are immigrants, and react as other immigrants have done before them, such as Negroes who move from the rural South to the urban North, or the Italians, Slavs, and others who came to America in the early part of the century. The marginal character distinctive of the first generation children of immigrants is apparent among the Spanish-speaking people who move to the cities. This points to one of the weaknesses of the book. It does not employ comparative materials sufficiently to clarify what is distinctively cultural in the Spanish-speaking group. A comparison with another Spanish-speaking group such as the Puerto Ricans might have been quite illuminating. Finally, the theoretical structure of the study is not clearly outlined. It is not evident with what theory of social change Saunders is operating, nor are the concepts employed sharply defined. As an example, the definition of social class on page 79 hardly tends to illuminate the subject.

Despite these reservations, however, this book is recommended. There is much of value for all health workers in it. The thoughtful reader will see himself and his activities vis-a-vis patients in a different light and may, perhaps, even change his ways.

GEORGE ROSEN

Standard Values in Nutrition and Metabolism—Edited by Errett C. Albritton. Philadelphia, Pa.: Saun-

ders, 1954. 380 pp.; 160 tables. Price, $6.50.

This volume is the second report (the first was "Standard Values in Blood") prepared under the direction of the Committee on the Handbook of Biological Data, American Institute of Biological Sciences, and the National Academy of Sciences—National Research Council. It is the result of a contract with the Wright Air Development Center, U. S. Air Force, to compile the more basic established data in the various fields of biological science. With the help of 800 authorities in the field, a tremendous amount of data have been assembled in one place.

The volume is divided into 13 sections covering data on the nutrients and their need and utilization in plant and animal life, pathways of metabolism, end products of metabolism and energy exchange. Many of the tables are so condensed and contain so many footnotes that it takes considerable effort to find the specific figure one may want. The bibliographic system may have many advantages, but for some purposes the procedure is not simplified. There is also danger that the data may be misinterpreted when tabulated without the reservations included in the original publications. In spite of these limitations, the actual data are remarkably free of errors. This does not mean that none occur; for example in table 112, item 139, it is indicated that 140 per cent of the total N is excreted in the form of urea. The index is well prepared and the entire volume should be of real value if used properly.

C. A. ELVEHJEM

Healthier Living—A Text in Personal and Community Health—By Justus J. Schifferes. New York: Wiley (440 Fourth Ave.), 1954. 928 pp. Price, $5.75 (School ed.); $6.75 (Trade ed.).

This volume is an excellent addition to the literature of personal and community hygiene for college students and will, no doubt, be cordially received as a textbook.

A challenging introduction by Dr. John Sawhill is followed by 53 chapters organized into four parts, including (1) Education for Family Living; (2) Mental Health; (3) Personal Health; and (4) Community Health. The prominent place given and the amount of space devoted to the topics of education for family living and to mental health give recognition to these subjects as topics of considerable discussion among college students.

Authoritative help and counsel are given on the many problems of personal health and adjustment which all students in college must face. Throughout the volume emphasis is placed upon the social factors which influence the health of college men and women. Written in language which is technical and at the same time within the reach of the college freshman, it should convince the student of the importance of conserving his own health during his college career and of his part as a citizen in the larger community after graduation.

The illustrations and diagrams add to the readability of the volume. The annotated references for further study and the questions for discussion and review at the end of each chapter should be especially helpful. LLOYD M. JONES

Health Supervision of Young Children—A Guide for Practicing Physicians and Child Health Conference Personnel—By the Committee on Child Health of the American Public Health Association. New York: American Public Health Association (1790 Broadway), 1955. 180 pp. Price, $2.00.

Here is a new volume which should be familiar to all who supervise child health in clinics or private offices.

We have come to accept the fact that "anything which interferes with physical or mental well-being of a child is of con-

cern to the physician," and that "feelings, attitudes, behavior are as worthy of investigation as physical lesions." What is not clear to many of us are the technics which are useful in pursuing these objectives. In a delightfully informative chapter on parent counseling, probably written by Nina Ridenour, who served as a staff consultant to the Committee on Child Health of the APHA, an interview technic is elucidated. Every medical student or house officer, whether or not he is entering pediatrics, psychiatry, or surgery would benefit by such subtitles as "What People Are Like," "What Do Mothers Want from Their Doctor?", "How Do Doctors Feel About Their Work?" With programs of family care or social and environmental medicine going on in many of our medical schools in an effort to bridge the gap in the changing concepts of medical care and education, this chapter should be required reading for all such courses—and in this field you certainly can also teach the old new tricks.

The psychological approach and content may frighten some of the uninitiated. The book may be a little top heavy in this regard, at the sacrifice of information concerning other deviations from normal growth and development or postural and nutritional defects so commonly seen in child health supervision. To the committee this was a calculated risk. I personally believe that this little volume projects itself far into the future and will be valuable long after we have solved the problem of nonrachitic bowing and hypochromic anemia.

This is an important addition to our literature on child health supervision.

AMOS CHRISTIE

Biochemical Determinants of Microbial Diseases — By Rene J. Dubos. Cambridge, Mass.: Harvard University Press, 1954. 152 pp. Price, $3.50.

This book does not pump facts. It stirs up thought, the highest goal of the teacher. The author cites phenomena of microbial diseases, describing the what, the when, and the where of each. He then reviews extensive experimental data bearing on them and throws light on mechanisms; the how and the why. He seeks for explanations in known facts. Failing this, he imagines. He hypothesizes. All too often he runs into blank walls, as in discussing the secondary participation of tissues in toxicity of the Gram-negative bacilli: inhibition of leukocyte migration, Schwartzman reactions, hyperpyrexias; all probably resulting from production of various toxic substances by the tissues themselves: lactic acid, cathepsins, serum proteases, etc. "—unfortunately nothing positive is known of the nature and site of the primary reaction."

Everywhere the author reveals possible paths to light. Some of these are tangled and involved. Others are shrouded in the mists of missing or doubtful data. Not a few seem to lead directly to a brilliant goal and goad the researcher to immediate crucial experiment. Each topic is the subject of engaging and provocative speculation, compelling suggestion or shrewd inference. The first section leals with latent infection and factors leading to overt disease: irradiation, nutritional deficiencies, hormone disturbances, intimate biochemistry of damaged tissues, poisons, changes in pH or O-R tension, etc. The second section deals with the environment of microorganisms in vivo. The inflammatory area is discussed as the site of intense glycolysis leading to the accumulation of lactic acid; where O-R tension is reduced; where proteolytic and other enzymes are released by tissue cells, and toxic substances like spermine, heme compounds, lipids and organic acids appear. The tissues and microorganisms become involved in an enormously complex interplay of all of these and many others

obviously active but still obscure. One may cavil with the author's attitude toward phagocytosis as a defense mechanism but, concerning metabolism, must agree that "in the field of animal pathology there is no case where the metabolic behavior of infectious agents, or the nature of the in vivo environment is sufficiently understood to afford a chemical explanation for the property of virulence." The section on Biochemical Disturbances Produced by Infection brings in problems of metabolic competitions, mechanisms of enzyme toxins like lecithinase and of general toxins like streptolysin O, as well as of specific toxins like tetanus toxin. Many related phenomena and problems are brought to light. There are similar sections on Tuberculosis and on Immunity and Inflammation. One may or may not agree with all of the author's views and ideas, but no one can read this book without revising or reshuffling or changing his own concepts and, in the process, learning a great deal about the host-parasite relationship, especially what we do not know about it. MARTIN FROBISHER

The Community and the Delinquent —By William C. Kvaraceus. New York: World Book Company (Yonkers-on-Hudson), 1954. 566 pp. Price, $4.50.

This book is both readable and thought-stimulating. As this reviewer examined its pages he found himself "sensitive" to certain of the facts discussed. For example in Table 5 on page 101 it is indicated that an unusual number of delinquents arise in the families of the foreign-born, and one good example is given in the opening chapters. Being himself foreign-born, and as one who has "threatened" to take his own family back to his own particular "ruritania," the reviewer finds on self-analysis, that the reason for his so threatening lies in the "awkward" effects apparent in his children, of adjusting to the amazing freedoms that characterize life in America, as it shows up in interfamily attitudes. That adjustment must be made in changing from one way of life to another is inevitable, but the process of adjustment is nearly always a painful one. Although undoubtedly familial upbringing has considerable bearing on these effects, it is also reasonable to suppose that environmental factors are also operative in this matter of delinquency. America is a vast place, seething with multi-activities, challenging to the maturity of the citizens, soul-inspiring, but also, for many, soul-disturbing. That breakdowns do occur is therefore not at all surprising.

This is a book that deals with the problem of delinquency as it is in America. It is an American book. In its 18 chapters, a logically minded author takes the reader through all of the steps, from a delineation of the extent of the problem, the researches being made, the various instruments for measuring the problem available, the community responsibilities in the matter, the possibilities for remedial actions, to the functions of all the agencies concerned, voluntary, scholastic, and judicial. For anyone who has not had the time to study the problem elsewhere, here is a book which contains the meat of it, wide in scope and content, both a text for the worker in the field, and also for the lay reader. It is possible that Professor Kvaraceus might have made more reference to the problem as it is in other countries and the means being used elsewhere to tackle it, as undoubtedly the delinquency problem looms large in many of those countries. It is not surprising that the most malleable and adaptable human animal, exposed as he is from birth to a variety of forces ranging from the pressures of a Marxist or Fascist society to the many freedoms of a western democracy, from a primitive tribal culture, or the squalor of some oriental city, to the splendid pan-

orama of the American scene, is not yet master of those forces.

Indeed, in the United States, the evidence that man is not too completely adaptable lies in the size of the growing crime and delinquency figures. Somehow the problem must be met. Perhaps no complete remedy is possible, but the factors that make for a stable home, a stable community, and a more stable economy can only help. It is not possible for every human being to be the complete mature adult. For those unfortunates who do not, or cannot, the community must assume full responsibility. In his book Professor Kvaraceus gives a very adequate coverage of the community's responsibility in so far as America is concerned, and evaluates the many ways in which the community may act in facing the delinquency problem. This reviewer would rate the book excellent for this purpose and for a thoroughly useful text about a complex problem. KENNETH I. E. MACLEOD

Taking Hold of Television—By Roger S. Hall. New York: National Publicity Council for Health and Welfare Services (257 Fourth Avenue), 1954. 119 pp. Price, $2.00.

In a somewhat leisurely fashion this book helps the reader to take hold of television in a nontechnical way. It discusses this fast growing medium of public information and suggests how official and private health and welfare agencies may use to advantage this mode of mass communication.

The well written, pithy chapters with the happy titles—The Nature of the Beast, Marshalling Our Forces, People on Our Side, Alarums and Excursions, Food for the Hungry Beast, and Joining Full Battle—carry the reader through the whole gamut of television with alacrity and ease.

The author is constantly pointing out that programs for TV must be entertaining as well as educational. He has succinctly described what features of agency programs meet both requirements.

For those who have yet to experience the television medium, this volume will be most valuable. It will help one to "take hold" and to see the broad horizon. For those who have experienced the power of television as part of an agency program, the volume recalls the many points that must be considered. "And once it's in your blood, . . . television has taken hold of you."

It is a book that those experienced with television may profit from and a must for those yet uninitiated.

J. EDGAR CASWELL

What Progress Against Mental Illness? Washington, D. C.: National Mental Health Committee, Inc. (1129 Vermont Avenue, N.W.), 1954. Unpaged.

This is a unique document representing a summary of reports of research progress against mental illness which projects have been aided by the National Institute of Mental Health or conducted at the Clinical Center in Bethesda, Md., under the auspices of the U. S. Public Health Service.

This spiral-bound volume begins with a digest of the facts about mental illness and related disorders in the United States, including cost figures. Expenditures for research in mental illness are stated to be less than five cents of every dollar spent for all types of medical research from all sources. The volume then proceeds with pithy one-sentence extracts of research progress in schizophrenia, senile dementia, mental deficiency, alcoholism, drug addiction, emotional factors, physiological factors, psychological factors, environmental factors, rehabilitation, etc. References are given to the source of the conclusions stated.

The authors, who remain anonymous, are due for a handsome vote of thanks

for bringing this subject down to earth where interested professionals and intelligent members of the lay public can understand what is under way. Here is a source book for hundreds of public addresses and study courses which can push forward this immensely important subject. REGINALD M. ATWATER

Cohort Fertility: Native White Woman in the United States—By Pascal K. Whelpton. Princeton, N.J.: Princeton University Press, 1954. 492 pp. Price, $6.00.

A notable contribution to the literature of demography, this book makes available for wide dissemination a very substantial opus. It is the product of many years of patient construction by one of the world's leading students of population and a master in the field of fertility.

The essential core of the work is a set of "life tables" defining reproductive history for the native-born white women of the United States. The first cohort starts with birth as early as 1875, and another is added in each subsequent year through 1933 to include all women who reach reproductive age empirically selected as 15 years. Thus, the reproductive experiences start with the year 1890, and continue through 1951. Paucity of data before establishment of the Birth Registration Area in 1915 is compensated by well reasoned assumptions leading to generalization from the available records.

The basic tables form a central section of 104 pages. This is preceded by a seven-chapter discussion of matters of more general interest. Elaboration of technical matters is for the most part restricted to an appendix of 104 pages. A "topical index" giving pagination of sectional headings, text tables, and figures within text and appendix chapters follows the table of contents; there is no subject index closing the volume. The 34 text tables and 21 text figures form a valuable supplement to the core tabulations upon which the book is built. These basic tables cover cumulative birth rates by order of birth, survivorship by parity, annual probabilities of death facing a restricted range of cohorts, plus a special short tabulation for the year 1940, and estimated total births by year and age of mother and by birth order. Five-year abridgements supplement (rarely replace) the single-year tables.

Seeking typographical errors is an indulgence for others. This reviewer noted only that a reference to Elbertie Foudray had this unwelcome characteristic. It may be noted incidentally that the volume is a photo-offset production with reduction only in the basic table section. Thus, type size is mostly large and the usual economy of offset is partly lost in a reduction of words per page.

The author is to be commended for his complete statement of all assumptions entering into elaboration of these tabulations. Exposition of the underlying reasoning is clear. Subsequent works may readily be modeled on the same frame, provided that the sculptor has the patience and persistence to accomplish that which distinguishes the author of this book. Those who wish to make a change may do so with full knowledge of that from which they depart.

Despite all efforts of the author to make the general text of this volume a nontechnical discussion, the whole work remains essentially a feast for the discriminating gourmet. It is a pity that such should be the case, but the probabilities seem very high to this reviewer that the reader will labor through this volume if he is concerned with the implications of technical language. And surely the reader should have such concern. Thus a work which approaches the magnificent in its bridging of a chasm obstructing the onward opening of a highway, falls short of expectation; some travelers will hesitate to cross, and too many others will do so with eyes sealed. ALAN E. TRELOAR

Books Received

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ARTHRITIS AND RADIOACTIVITY. Wade V. Lewis. Boston, Mass.: Christopher Publishing House, 1955. 168 pp. Price, $2.50.

BETTER SOCIAL SERVICES FOR MENTALLY ILL PATIENTS. PROCEEDINGS OF INSTITUTE ON SOCIAL WORK IN PSYCHIATRIC HOSPITALS. Ruth I. Knee, Editor. New York: American Association of Psychiatric Social Workers (1860 Broadway), 1955. 92 pp. Price, $1.50.

CULTURE AND HUMAN FERTILITY. Frank Lorimer, et al. UNESCO. New York: Columbia University Press, 1955. 510 pp. Price, $4.50.

DENTISTRY IN PUBLIC HEALTH. Walter J. Pelton and Jacob M. Wisan (2nd ed.). Philadelphia, Pa.: Saunders, 1955. 282 pp. Price, $6.50.

EDUCATORS GUIDE TO FREE TAPES, SCRIPTS AND TRANSCRIPTIONS. Compiled and edited by Walter A. Wittich, and Gertie L. Hanson. Randolph, Wis.: Educators Progress Service, 1955. 144 pp. Price, $4.75.

FINANCING HOSPITAL CARE FOR NONWAGE AND LOW-INCOME GROUPS. FINANCING HOSPITAL CARE IN THE UNITED STATES. Vol. 3. Edited by Harry Becker. New York: Blakiston Division, McGraw-Hill, 1955. 110 pp.

GOVERNMENT OF METROPOLITAN MIAMI, THE. Chicago, Ill.: Public Administration Service, 1955. 194 pp. Price, $5.00.

HEALTH CAREERS GUIDEBOOK. Zilpha C. Franklin. Published by the National Health Council and Supported in the Public Health Interest by the Equitable Life Assurance Society of the United States. New York, N. Y.: Health Careers, 1955. 156 pp. Partners for Health. The general chapters of the Guidebook in a separate pamphlet. 40 pp.

HEALTH VISITOR AND TUBERCULOSIS, THE. Sheena H. Buchanan. London: Tavistock House North, W.C. 1, 1955. 150 pp. Price, $2.00.

LEADER'S DIGEST, THE. THE BEST FROM ADULT LEADERSHIP. Vol. No. 1. Chicago, Ill.: The Adult Education Association of the U.S.A., 96 pp.

MAP—WORLD DISTRIBUTION OF LEISHMANIASES. New York: American Geographical Society, 1954. Price, $1.25 folded, $1.50 flat.

MEDICAL CARE OF THE AGED AND CHRONICALLY ILL, THE. Freddy Homburger. Boston, Mass.: Little, Brown, 1955. 253 pp. Price, $5.75.

MOBILIZATION AND HEALTH MANPOWER. REPORT TO THE DIRECTOR OF THE OFFICE OF DEFENSE MOBILIZATION BY THE HEALTH RESOURCES ADVISORY COMMITTEE. Washington, D. C.: Office of Defense Mobilization, 1955. 50 pp.

MOSQUITOES. THEIR BIONOMICS AND RELATION TO DISEASE. William R. Horsfall. New York: Ronald Press, 1955. 723 pp. Price, $16.00.

NATIONAL PLUMBING CODE. MINIMUM REQUIREMENTS FOR PLUMBING. Sponsored by the American Public Health Association and the American Society of Mechanical Engineers. New York: American Society of Mechanical Engineers, 1955. 174 pp. Price, $3.50.

PSITTACOSIS. DIAGNOSIS, EPIDEMIOLOGY AND CONTROL. F. R. Beaudette, editor. New Brunswick, N. J.: Rutgers University Press, 1955. 239 pp. Price, $5.00.

PSYCHIATRIST AND THE DYING PATIENT, THE. K. R. Eissler. New York: International Universities Press, 1955. 338 pp. Price, $5.00.

SENILE AGED PROBLEM IN THE UNITED STATES, THE. Dorothy C. Tompkins. Berkeley, Calif.: University of California, Bureau of Public Administration, 1955. 82 pp. Price, $1.50.

SURVEY OF 95 CUSTODIAL PATIENTS IN A MUNICIPAL HOSPITAL. Rehabilitation Monograph VII. Michael M. Dacso. New York: Institute of Physical Medicine and Rehabilitation, 1954. 52 pp.

SYSTEMS OF SOCIAL SECURITY. United States. International Labour Office. Washington, D. C.: International Labour Office, 1954. 106 pp. Price, $.75.

TREATMENT OF ACUTE POLIOMYELITIS. William A. Spencer (2nd ed.). Springfield, Ill.: Charles C Thomas, 1954. 134 pp.

TUBERCULOSIS. Bulletin of The World Health Organization. Vol. 12, No. 1–2. New York: Columbia University Press, 1955. 310 pp. Price, $4.00.

TWENTY YEARS OF NURSE-MIDWIFERY 1933–1953. New York: Maternity Center Association, 1955. 124 pp. Price, $2.00.

WELFARE PROBLEMS AND SERVICES IN BERKELEY, CALIF. Martin Wolins. University of California, Berkeley: Berkeley Council of Social Welfare and School of Social Welfare, 1954. 117 pp. Price, $1.50.

A Selected Public Health Bibliography with Annotations

Public Appeal Statistics—Population growth in 1954 was the country's largest annual increment. Most of the growth was the result of excess births over deaths. California's population increased by 4 per cent, but several states made gains of less than 1 per cent. Total gain was 2,830,000.

ANON. Record Population Growth in 1954. Statist. Bull. Metrop. Life Insur. Co. 35, 12:1 (Dec.), 1954.

Passé, They Say—In England, it seems, there have been some pointed criticisms tossed at the child health centers. Because of the lowered infant death rates, it is even hinted that the centers might just as well shut up shop. The National Health Service is supposed to take care of all needs anyway. The commentator concludes that though the MCH schemes may perhaps need amendment there is still much they can do that isn't being done.

ANON. The Future of Child Welfare Centres. Pub. Health 68, 4:51 (Jan.), 1955.

As We'd Like Others to See Us—Professor and Mrs. Bond put a "best (American) foot forward" when they tell their British hosts how we do it here in matters of: (1) applied environmental hygiene and training for these services (in a top-notch state university); and (2) guiding local health educational programs (by a similar state health department). Presumably, some of their British hearers who have toured America must have let the cat out of the bag—the "cat" being that conditions everywhere, hereabouts, may be not quite as advanced as those reported upon.

BOND, R. G. An Environmental Sanitation Programme in a University Setting (and) BOND, B. W. Health Education Functions in a State Department of Health. The Sanitarian (Brit.) 63, 2:85 (Nov.), 1954.

Chest X-Rays at Work—Under way is a plan to study 6,000 men over 45 for a 10-year period by means of periodic chest x-rays. Each is interviewed before the first roentgenogram. Among the first 3,945 surveyed, 650 had symptoms—37 of lung cancer. None was a nonsmoker.

BOUCOT, K. R., et al. Philadelphia Pulmonary Neoplasm Research Project. J.A.M.A. 157, 5:440 (Jan. 29), 1955.

Sound, But Widely Ignored—With high occupational risks from infectious disease and excessive radiation, among other hazards, physicians as a class are careless of their own health. They need to shun indifference, but more positive action is called for—chiefly "a family physician for each physician's family." Does this apply to public health physicians, too?

DOWLING, H. F. Physician, Heal Thyself. G. P. 11, 1:69 (Jan.), 1955.

Quote of the Month—"Is the 'ideal' diet one that promotes the most rapid growth, or longest survival, or greatest freedom from disease, or the greatest capacity to survive unfavorable environmental conditions, or exposure to radiation? Is the 'ideal' diet one that best promotes fertility or mental development and productivity, or is most effective in maintaining physical exertion or emotional stability? We have no assurance that these objectives are compatible. On the contrary there is good evidence that at least some of them are not."

ERSHOFF, B. H. Nutrition and Stress. Nutrition Rev. 13, 2:33 (Feb.), 1955.

How-To-Do-It—Twelve empirically derived principles that may increase chances of success when applied to community development programs are set down by a social anthropologist. They were born of informal discussion by a

group of graduate students, many with experience outside the United States, but the principles are for domestic consumption.

FOSTER, G. M. Guidelines to Community Development Programs. Pub. Health Rep. 70, 1:19 (Jan.), 1955.

Promising Start—This step-by-step account of the long process by which Cattaraugus County (N.Y.) finally succeeded in attaching a mental health venture to the Health Department program may have something suggestive to say to other health people who are at the wonder-what-we-should-do stage.

GRANT, M. A Mental Health Program is Born. Pub. Health Rep. 70, 1:83 (Jan.), 1955.

Dependable Death Reports—Comparing original death certificates with autopsy findings reveals serious inaccuracies. Programs for bettering the accuracy of cause-of-death data might be promoted by undertaking local demonstrations which are discussed.

JAMES, G., et al. Accuracy of Causes-of-Death Statements on Death Certificates. Pub. Health Rep. 70, 1:39 (Jan.), 1955.

What to Cling to!—An iconoclast looks at the graphs portraying declining mortality rates from tuberculosis, diphtheria, measles, and pneumonia and finds some unsettling inferences concerning the reversible ecology of endemic-epidemic diseases.

MAGILL, T. P. The Immunologist and the Evil Spirits. J. Immunol. 74, 1:1 (Jan.), 1955.

What One County Is Doing—Despite declines in tuberculosis death rates "we are finding almost as many new cases per year. . . .At present the county has over 4,000 cases of tuberculosis registered." Perforce, this county has turned to demonstrational therapy clinics to guide the home treatment of selected cases as one way to meet the burden. It is a joint health department-tuberculosis association venture about which you may want the details.

MCKAY, D. R. The Home Management of Tuberculosis with Newer Drug Therapy. New York State J. Med. 55, 1:87 (Jan.), 1955.

"It Is a Partnership"—An outstanding extramural event of the Buffalo Annual Meeting was the visit to the Cancer Research Institute, at the dedication of which a good many important things were said by distinguished speakers. Here is the verbatim record of the memorable addresses.

MOORE, G. E., et al. Roswell Park Memorial Institute. New York State J. Med. 55, 3:384 (Feb.), 1955.

Ersatz Ice Cream—A frozen dessert made with a margarine type fat in place of cream, called "Mellorine," is sold in great quantities in Texas, Illinois, Missouri, Oklahoma, and in lesser amounts in a half dozen southern states. This is a nutritious product you may want to know about.

POWER, C. H. Mellorine. Sanitarian (American) 17, 3:134 (Nov.–Dec.), 1954.

People at Work—"We told our story (of town improvement through participation) so many times that we were tired of it ourselves . . . material which had been live and exciting began to sound flat and prosaic. . . ." So what did they do about it? They worked up a slide film show, subject to change from time to time. You may find something new, in this old idea, from which you may help yourself liberally.

SARCHET, B. Slides Tell Our Story. Adult Leadership 3, 8:8 (Feb.), 1955.

Rich Harvest—More than a million routine hospital admission chest x-rays and an equal number from community or special group mass examinations are compared. Almost twice as much definite or suspected tuberculosis was unearthed through the first as from the second method. Four of every five in both series had not been previously re-

ported. Possible lung tumors detected in both series were found two and one-half times more frequently among males.

SIEGAL, W., et al. Case Findings from Routine Chest Roentgenograms. J.A.M.A. 157, 5:435 (Jan. 29), 1955.

As Families Grow Old—Pictured here are changes in family size, occupational status, and composition over a quarter century period as revealed by matched cohorts. This is the concluding item of a six-paper series.

TABACK, M. Family Studies in the Eastern Health District. Milbank Mem. Fund Quart. 33, 1:5 (Jan.), 1955.

About Leading the Horse—Inducing children to help drink up surplus milk supplies as a part of the National School Lunch Program is discussed. Studies are proposed in times and methods of milk service, price differentials, and vending machines as inducements to that highly desirable but improbable end.

TRAINER, L. R. The National School Lunch Program—A Report. J. Am. Dietet. A. 31, 1: 18 (Jan.), 1955.

Still a Job to Do—During the past decade rheumatic fever and rheumatic heart disease have been reduced, but there remains still to be done much case finding, and early treatment and rehabilitation, say the writers.

WALLACE, H. M., and RICH, H. Changing Status of Rheumatic Fever and Rheumatic Heart Disease in Children and Youth. Am. J. Dis. Child. 89, 1:7 (Jan.), 1955.

Embarrassing Abundance — A graph you may want to mull over is the one depicting our eating habits over the past 40-odd years. Food supplies are now better distributed among all income groups and current consumption levels provide more of all major nutrients except vitamin A and ascorbic acid (than in prewar years) and the latter decreases are small indeed. Promotion of greater consumption of dairy, citrous, and meat products is discussed.

WELLS, O. V. Outlook for Food Supplies, Surplus Commodities and Food Habits. J. Am. Dietet. A. 31, 1:13 (Jan.), 1955.

If additional information is desired regarding the articles listed in this Bibliography, please communicate directly with the publication in which they appeared; the addresses are furnished for your convenience.

Adult Leadership, Adult Education Association of the United States, 743 N. Wabash Ave., Chicago 11, Ill.

Am. J. Dis. Child. (The American Journal of Diseases of Children), American Medical Association, 535 N. Dearborn St., Chicago 10, Ill.

G. P., American Academy of General Practice, Broadway at 34th St., Kansas City 2, Mo.

J. Am. Dietet. A. (Journal of the American Dietetic Association), 620 N. Michigan Ave., Chicago, Ill.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago 10, Ill.

J. Immunol. (Journal of Immunology, Virus Research and Experimental Chemotherapy), Williams and Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2, Md.

Milbank Mem. Fund Quart. (The Milbank Memorial Fund Quarterly), 40 Wall St., New York 5, N. Y.

New York State J. Med. (New York State Journal of Medicine), 292 Madison Ave., New York 17, N. Y.

Nutrition Rev. (Nutrition Reviews), Nutrition Foundation, Inc., Chrysler Bldg., New York 17, N. Y.

Pub. Health (Public Health), Society of Medical Officers of Health, Tavistock House, Tavistock Sq., London, W.C. 1, England.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Sanitarian (British), Sanitary Inspectors Association, 19 Grosvenor Place, City of Westminster, S.W. 1, England.

Sanitarian, National Association of Sanitarians, 1256 West 7th St., Los Angeles 14, Calif.

Statist. Bull., Metrop. Life Insur. Co. (Statistical Bulletin Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

American Public Health Association

SECTION COUNCILS

1954–1955

Dental Health Section
(Organized 1943)

H. Shirley Dwyer, D.D.S., Chairman, State Dept. of Health, Little Rock, Ark.
John T. Fulton, D.D.S., Vice-Chairman, Children's Bureau, Washington 25, D. C.
Carl L. Sebelius, D.D.S., Secretary, 420 6th Ave., N., Nashville 3, Tenn.
Polly Ayers, D.D.S. (1959)
Thomas L. Hagan, D.D.S. (1958)
Thomas W. Clune, D.M.D. (1957)
David B. Ast, D.D.S. (1956)
Lester A. Gerlach, D.D.S. (1955)

Engineering and Sanitation Section
(Organized 1911)

Walter S. Mangold, Chairman, University of California, Berkeley 4, Calif.
Earle W. Sudderth, Vice-Chairman, 4815 Ross Ave., Dallas, Tex.
Clarence I. Sterling, Jr., Secretary, 511-A State House, Boston, Mass.
Paul W. Purdom (1959)
Albert E. Berry, Ph. D. (1958)
Herbert J. Dunsmore (1957)
Mark D. Hollis, C.E. (1956)
James A. King, Jr. (1955)

Epidemiology Section
(Organized 1929)

John E. Gordon, M.D., Chairman, 1 Shattuck St., Boston, Mass.
Joseph A. Bell, M.D., Vice-Chairman, National Institutes of Health, Rockville Pike, Bethesda, Md.
Wendell R. Ames, M.D., Secretary, 69 Chesterfield Drive, Buffalo, N. Y.
Philip E. Sartwell, M.D. (1959)
Ross L. Gauld, M.B. (1958)
Lewis W. Hackett, M.D. (1957)
Fred L. Soper, M.D. (1956)
W. A. Brumfield, Jr., M.D. (1955)

Food and Nutrition Section
(Organized 1917)

Harry W. von Loesecke, Chairman, 307 Windsor St., Silver Spring, Md.
Bertlyn Bosley, Ph.D., Vice-Chairman, State Board of Health, Raleigh, N. C.
Helen E. Walsh, Secretary, 760 Market St., San Francisco, Calif.
Robert C. Hockett, Ph.D. (1959)
Robert E. Shank, M.D. (1958)
Catherine M. Leamy (1957)
Wendell H. Griffith, Ph.D. (1956)
John T. R. Nickerson, Ph.D. (1955)

Health Officers Section
(Organized 1908)

J. W. R. Norton, M.D., Chairman, State Board of Health, Raleigh, N. C.
Robert N. Barr, M.D., Vice-Chairman, 1912 East River Terrace, Minneapolis, Minn.
Daniel Bergsma, M.D., Secretary, State House, Trenton 7, N. J.
Edwin H. Jorris, M.D. (1959)
John D. Porterfield, M.D. (1958)
Frank M. Hall, M.D. (1957)
Harold D. Chope, M.D. (1956)
Joseph G. Molner, M.D. (1955)

Laboratory Section
(Organized 1899)

S. Edward Sulkin, Ph.D., Chairman, 2211 Oak Lawn Ave., Dallas 4, Tex.
Col. Dwight M. Kuhns, MC, Vice-Chairman, Room 2836, Main Navy Building, Washington, D. C.
Albert V. Hardy, M.D., Secretary, State Board of Health, Jacksonville, Fla.
Myrtle Greenfield (1959)
Albert H. Harris, M.D. (1958)
John T. Tripp, Ph.D. (1957)
Charles M. Carpenter, M.D. (1956)
Geoffrey Edsall, M.D. (1955)

Maternal and Child Health Section
(Organized 1921)

Martha L. Clifford, M.D., Chairman, State Dept. of Health, Hartford, Conn.
R. Gerald Rice, M.D., Vice-Chairman, 4 Fernald Drive, Cambridge, Mass.
Alfred Yankauer, M.D., Secretary, 39 Columbia St., Albany 7, N. Y.
Samuel M. Wishik, M.D. (1959)
Viola Russell, M.D. (1958)
Frances C. Rothert, M.D. (1957)
Henry C. Schumacher, M.D. (1956)
Herbert R. Kobes, M.D. (1955)

Medical Care Section
(Organized 1948)

Paul A. Lembcke, M.D., Chairman, 615 N. Wolfe St., Baltimore, Md.
Frederick D. Mott, M.D., Vice-Chairman, 1427 Eye St., N.W., Washington, D. C.
Herbert Notkin, M.D., Secretary, 318 N. Clinton St., Syracuse, N. Y.
Milton Terris, M.D. (1959)
Henry B. Makover, M.D. (1958)
Elizabeth P. Rice (1957)
Henry C. Daniels (1956)
Bernard D. Daitz, Ph.D. (1955)

Occupational Health Section
(Organized 1914)

Carl A. Nau, M.D., Chairman, School of Medicine, University of Texas, Galveston, Tex.
Clyde M. Berry, Ph.D., Vice-Chairman, Esso Standard Oil Company, Box 222, Linden, N. J.
Lewis J. Cralley, Ph.D., Secretary, Public Health Service, 1014 Broadway, Cincinnati, Ohio
Warren A. Cook (1959)
O. A. Sander, M.D. (1958)
Frank A. Patty (1957)
Leonard Greenburg, M.D. (1956)
Lemuel McGee, M.D. (1955)

Public Health Education Section
(Organized 1922)

Ann W. Haynes, Chairman, 22 Darrell Place, San Francisco, Calif.
Ben D. Kiningham, Jr., Vice-Chairman, 730 S. 6th St., Springfield, Ill.
Lucretia A. Saunders, Secretary, 760 Market St., San Francisco 2, Calif.
Elmer J. Anderson (1959)
Mary F. Arnold (1958)
Ruth Sumner, Ph.D. (1957)
Ann W. Haynes (1956)
Lucy S. Morgan, Ph.D. (1955)

Public Health Nursing Section
(Organized 1923)

Marian I. Murphy, R.N., Chairman, University of Minnesota School of Public Health, Minneapolis, Minn.
Edna J. Brandt, R.N., Vice-Chairman, 4337 15th Ave., N.E., Seattle, Wash.
Helen L. Fisk, R.N., Secretary, 318 Woodbourne Ave., Baltimore, Md.
Patricia Walsh, R.N. (1959)
Margaret B. Dolan, R.N. (1958)
Margaret L. Shetland, R.N. (1957)
Edna L. Moore, R.N. (1956)
Bosse B. Randle, R.N. (1955)

School Health Section
(Organized 1942)

Charles C. Wilson, M.D., Chairman, Yale School of Medicine, New Haven, Conn.
Franklin M. Foote, M.D., Vice-Chairman, 1790 Broadway, New York 19, N. Y.
Elena M. Sliepcevich, Secretary, Springfield College, Springfield, Mass.
Edward B. Johns, Ed.D. (1959)
John H. Shaw, Ed.D. (1958)
Fred V. Hein, Ph.D. (1957)
H. F. Kilander, Ph.D. (1956)
Marjorie L. Craig (1955)

Statistics Section
(Organized 1908)

Carl L. Erhardt, Chairman, 125 Worth St., New York 13, N. Y.
John W. Fertig, Ph.D., Vice-Chairman, 600 West 168th St., New York 32, N. Y.
William M. Haenszel, Secretary, Room 2203, Bldg. T-6, Bethesda, Md.
Mortimer Spiegelman (1959)
A. Hardisty Sellers, M.D. (1958)
Theodore D. Woolsey (1957)
Harold F. Dorn, Ph.D. (1956)
Matthew Taback, Sc.D. (1955)

American Public Health Association

COMMITTEES

1954–1955

THE ASSOCIATION COMMITTEE LISTS

These pages again bring to the readers the lists of Association committee members. Once again they make a goodly company representing altogether more than 150 committees, a capable and loyal group of workers.

A certain proportion of the names of those formerly carried on such lists do not appear here. They have the Association's thanks for work well done in other years and for the fine spirit in which they have recognized the fact that, for the sake of the Association and its future effectiveness, leadership must be shared and leaders constantly developed through the assumption of responsibility. Our Association is stronger today because leaders periodically have stepped aside in order that others may step forward to acquire such knowledge as they themselves have gained.

Change in leadership is an accepted policy in the Association. Such a professional society is never strong if an informed few lead many uninformed though loyal followers. A strong association is composed of leaders many of whom could at any time take their turn and lead.

As we gratefully acknowledge the debt to those who have rendered their services as they carried their responsibilities of office, we turn with hope and expectation of other achievements to the men and women who are now to lead.

Committee on Administrative Practice

Roscoe P. Kandle, M.D., Chairman, 125 Worth St., New York 13, N.Y. (1957)
Reginald M. Atwater, M.D., Secretary, 1790 Broadway, New York 19, N.Y.

Franklyn B. Amos, M.D. (1957)
Margaret G. Arnstein, R.N. (1955)
M. Leon Bauman, M.D., (1957),
Representing the Health Officers Section
Dean A. Clark, M.D., (1956)
Paul M. Densen, D.Sc. (1958)
Kenneth A. Easlick, D.D.S. (1958)
Vlado A. Getting, M.D. (1958)
Paul M. Golley, M.D. (1955),
Representing the Health Officers Section
T. Paul Haney, M.D. (1956),
Representing the Health Officers Section
Paul A. Harper, M.D. (1955)
Henry Van Zile Hyde, M.D. (1956)
Clarence W. Klassen (1957)
Joseph G. Molner, M.D. (1956)
Mack I. Shanholtz, M.D. (1955)

Consultants:
Haven Emerson, M.D.
Fred W. Jackson, M.D.
Henry F. Vaughan, Dr.P.H.

Staff:
Edward Press, M.D., Field Director

Subcommittee on Accident Prevention
Albert L. Chapman, M.D., Chairman, Public Health Service, 42 Broadway, New York, N.Y.
Dwight M. Bissell, M.D.
Halbert L. Dunn, M.D., Representing the Statistics Section
Thomas Fansler
John E. Gordon, M.D.
Herbert H. Hasson
F. M. Hemphill, Ph.D.
Frederick S. Kent
Ralph K. Longaker, C.E.
Ross A. McFarland, Ph.D.
Marjorie B. May
Elisabeth C. Phillips, R.N.
Edward R. Schlesinger, M.D.
Gertrud Weiss, M.D.
George M. Wheatley, M.D.

Subcommitee on Chronic Disease and Rehabilitation
Lester Breslow, M.D., Chairman, 2180 Milvia St., Berkeley, Calif.
Robert J. Anderson, M.D.

Caroline H. Elledge
V. L. Ellicott, M.D.
Edward M. Holmes, Jr., M.D.
Felix E. Moore
Corbett Reedy
Dean W. Roberts, M.D.
G. D. Carlyle Thompson, M.D.
Dorothy Wilson, Ed.D.

Staff:
Jonas N. Muller, M.D., Acting Director, 321 Congress Ave., New Haven 11, Conn.
Edward B. Kovar, Research Associate

Subcommittee on Endemic Goiter
O. P. Kimball, M.D., Chairman, 2468 Euclid Heights Blvd., Cleveland, Ohio
B. E. Brush, M.D.
Haven Emerson, M.D.
Charles G. King, Ph.D.
Leonard A. Maynard, Ph.D.
E. M. Nelson, Ph.D.
Hazel K. Stiebeling, Ph.D.
Harry A. Towsley, M.D.

Consultant:
David Marine, M.D.

Subcommittee on Interstate Acceptance of Milk
Clarence W. Klassen, Chairman, Capitol Bldg., Springfield, Ill.
Arthur N. Beck
Paul Corash
John D. Faulkner
H. Clifford Goslee
Walter D. Tiedeman
K. G. Weckel, Ph.D.
Huntington Williams, M.D.

Subcommittee on Local Health Units
Berwyn F. Mattison, M.D., Chairman, State Dept. of Health, Harrisburg, Pa.
Allan Filek, M.D.
Alfred H. Fletcher
Ollie M. Goodloe, M.D.
Jack C. Haldeman, M.D.
Dudley W. Hargrave, M.D.
Andrew Hedmeg, M.D.
Helen E. Kinney, Ed.D.
Edward G. McGavran, M.D.
Ella T. Robeson, M.D.
Mack I. Shanholtz, M.D.
E. Bruce Underwood, M.D.
Frank R. Williams
Vernon N. Winkle, M.D.

Subcommittee on Medical Care
Dean A. Clark, M.D., Chairman, Massachusetts General Hospital, Boston 14, Mass.
Lester Breslow, M.D.
Edwin F. Daily, M.D.
W. Palmer Dearing, M.D.
James P. Dixon, M.D.
Caroline Elledge
C. B. Esselstyn, M.D.
I. S. Falk, Ph.D.
Frederick D. Mott, M.D.
Eleanor W. Mole
Edward S. Rogers, M.D.
C. Rufus Rorem, Ph.D.
Frederick B. Roth, M.D.
Nathan Sinai, Dr.P.H.
Milton Terris, M.D.
R. M. Walls, D.D.S.

Staff:
Jonas N. Muller, M.D., Staff Director, 321 Congress Ave., New Haven 11, Conn.
Matthew Huxley, Administrative Assistant

JOINT COMMITTEE ON MEDICAL CARE (with the American Public Welfare Association)

APWA
I. J. Brightman, M.D., Co-Chairman, 112 State St., Albany, N.Y.
James Brindle
William L. Painter
Mary Weaver

APHA
(Co-Chairman to be appointed)
Dean A. Clark, M.D.
I. S. Falk, Ph.D.
Milton Terris, M.D.

Joint Conference on Medical Care for the Indigent (with the American Dental Association, American Hospital Association, American Medical Association, and American Public Welfare Association.)

ADA
David Brock, D.D.S.
Robert Downs, D.D.S.

AHA
Edison Dick
Maurice J. Norby
Hiram Sibley

AMA
H. B. Mulholland, M.D., Chairman
E. P. Coleman, M.D.
George W. Cooley

APHA
Lester Breslow, M.D.
Milton Terris, M.D.
James P. Dixon, M.D.

APWA
I. J. Brightman, M.D.
Carl Schmidt, Jr.
Mary S. Weaver

Staff
Rudolph H. Friedrich, D.D.S. (ADA)
Maurice J. Norby (AHA)
George W. Cooley (AMA)
Jonas N. Muller, M.D. (APHA)
Pearl Bierman (APWA)

Subcommittee on Sanitation
Harold A. Whittaker, Chairman, 2101 Constitution Ave., Washington, D. C.
Herbert J. Dunsmore
Alfred H. Fletcher
Clarence W. Klassen
Erminie C. Lacey
Arthur P. Miller, C.E.

Consultant:
William T. Ingram

Subcommittee on State and Local Health Administration
Vlado A. Getting, M.D., Chairman, University of Michigan, Ann Arbor, Mich.
Aaron W. Christensen, M.D.
Robert H. Hamlin, M.D.
George James, M.D.
Matthew R. Kinde, M.D.
Berwyn F. Mattison, M.D.
Murray Nathan, LL.B.
Robert E. Rothermel, M.D.
Edward L. Stockton
Sarah Stokes, R.N.
Charles F. Sutton, M.D.

Tuberculosis Liaison Representative (with the American Trudeau Society)
Herbert R. Edwards, M.D.

Committee on Eligibility

Rodney R. Beard, M.D., Chairman, 2330 Clay St., San Francisco, Calif. (1955)
Reginald M. Atwater, M.D., Secretary, 1790 Broadway, New York 19, N. Y.

John H. Browe, M.D., Food and Nutrition Section (1956)
Edmund K. Kline, Dr.P.H., Laboratory Section (1956)
Pearl P. Coulter, R.N., Public Health Nursing Section (1955)
Pearl Bierman, Medical Care Section (1956)
Harald M. Graning, M.D., Health Officers Section (1955)
Ellis S. Tisdale, Engineering and Sanitation Section (1956)
Edward B. Johns, Ed.D., School Health Section (1955)
Herbert R. Kobes, M.D., Maternal and Child Health Section (1955)
John P. Fox, M.D., Epidemiology Section (1956)
Mary Lou Skinner, Public Health Education Section (1956)
Franklin M. Erlenbach, Jr., D.M.D., Dental Health Section (1956)
Elliott H. Pennell, Statistics Section (1955)
Harry F. Schulte, Occupational Health Section (1955)

Committee on Professional Education

Leroy E. Burney, M.D., Chairman, Public Health Service, Washington 25, D. C. (1955)
Reginald M. Atwater, M.D., Secretary, 1790 Broadway, New York 19, N.Y.

Philip E. Blackerby, Jr., D.D.S. (1955)
Herbert M. Bosch (1956)
Robert D. Defries, M.D. (1957)
Albert V. Hardy, M.D. (1956)
S. S. Lifson (1957)
Otto Todd Mallery, Jr., M.D. (1957)
E. G. McGavran, M. D. (1957)
Janice E. Mickey, R.N. (1955)
Dean W. Roberts, M.D. (1956)
Dean F. Smiley, M.D. (1955)
Robert G. Webster (1956)

Consultants:
Otis L. Anderson, M.D.
Wilson G. Smillie, M.D.

Staff:
Edith M. Boyd, Associate Secretary

Subcommittee on Educational Qualifications of Community Health Educators
Clair E. Turner, Dr.P.H., Chairman, 120 Broadway, New York, N. Y.
S. S. Lifson, Referee, 1790 Broadway, New York 19, N. Y.
Mary F. Arnold
Dwight M. Bissell, M.D.
Mayhew Derryberry, Ph.D.
Ruth E. Grout, Ph.D.
Naomi H. Hall

Ira V. Hiscock
Granville W. Larimore, M.D.
Lucy S. Morgan, Ph.D.
Warren H. Southworth, Dr.P.H.
Felix J. Underwood, M.D.
Robert O. Yoho

Subcommittee on Educational Qualifications of Dental Hygienists in Public Health

Donald J. Galagan, D.D.S., Chairman, Public Health Service, Washington 25, D.C.
Philip E. Blackerby, Jr., D.D.S., Referee, W. K. Kellogg Foundation, Battle Creek, Mich.
David B. Ast, D.D.S.
Polly Ayers, D.D.S.
Evelyn R. Hannon, R.N.
Margaret H. Jeffreys
Carl Sebelius, D.D.S.
Margaret Swanson
Elizabeth M. Warner

Subcommittee on Educational Qualifications of Public Health Engineers

B. A. Poole, C.E., Chairman, 1330 W. Michigan St., Indianapolis 7, Ind.
Herbert M. Bosch, Referee, University of Minnesota School of Public Health, Minneapolis 14, Minn.
H. G. Baity, Sc.D.
Edward J. Cleary, C.E.
Morton S. Hilbert, C.E.
Arthur P. Miller, C.E.

Subcommittee on Educational Qualifications of Health Officers

V. A. Van Volkenburgh, M.D., Chairman-Referee, State Office Bldg., Albany 1, N. Y.
Alfred L. Burgdorf, M.D.
James A. Crabtree, M.D.
Paul M. Golley, M.D.
Matthew R. Kinde, M.D.
Berwyn F. Mattison, M.D.
Frederick D. Mott, M.D.
Mack I. Shanholtz, M.D.

Consultants:
Otis L. Anderson, M.D.
Daniel Bergsma, M.D.
Charles F. Blankenship, M.D.
Harold D. Chope, M.D.
C. Howe Eller, M.D.
John M. Gaus, Ph.D.
Frank M. Hall, M.D.
Hugh R. Leavell, M.D.
Arthur Lesser, M.D.
Joseph G. Molner, M.D.
Harry S. Mustard, M.D.
Frank J. Osborne
John D. Porterfield, M.D.
Robert H. Riley, M.D.
Roger F. Sondag, M.D.
William R. Willard, M.D.

Subcommittee on Educational Qualifications of Personnel in Hospital Licensing Programs

Martha A. O'Malley, M.D., Chairman, 1330 Michigan St., Indianapolis 7, Ind.
Dean W. Roberts, M.D., Referee, 615 N. Wolfe St., Baltimore 5, Md.
John J. Bourke, M.D.
John R. McGibony, M.D.
Vincent F. Otis
Anthony J. J. Rourke, M.D.
Marion W. Sheahan, R.N.
James W. Stephan

Subcommittee on Educational Qualifications of Industrial Hygienists

Seward E. Miller, M.D., Chairman, Public Health Service, Washington 25, D. C.
Reginald M. Atwater, M.D., Referee, 1790 Broadway, New York 19, N. Y.
William G. Fredrick, Sc.D.
Theodore F. Hatch
Raymond Hussey, M.D.
Frank A. Patty
Clarence D. Selby, M.D.

Subcommittee on Educational Qualifications of Nutritionists in Health Agencies

John H. Browe, M.D., Chairman, 39 Columbia St., Albany 7, N. Y.
Marjorie M. Heseltine
Ruth L. Huenemann, D.Sc.
Anne R. Matthews
Jessie C. Obert, Ph.D.
Alice H. Smith
M. Elizabeth Vaughan

Consultants:
John M. Chapman, M.D.
Roscoe P. Kandle, M.D.

Subcommittee on Educational Qualifications of Sanitarians

B. A. Poole, C.E., Chairman, 1330 W. Michigan St., Indianapolis 7, Ind.
Herbert M. Bosch, Referee, University of Minnesota School of Public Health, Minneapolis 14, Minn.
Harold S. Adams
David B. Lee
Walter S. Mangold
Harold C. Taylor, Jr.

Subcommittee on Educational Qualifications of Executives of Voluntary Health Associations and Health Council Executives

James G. Stone, Chairman, 1790 Broadway, New York 19, N. Y.
(Personnel to be appointed.)

Subcommittee on Field Training of Public Health Personnel

Edward G. McGavran, M.D., Chairman, University of North Carolina School of Public Health, Chapel Hill, N. C.
William C. Gibson, C.E.
Matthew R. Kinde, M.D.
James C. Malcolm, M.D.
Pearl McIver, R.N.
Hugh B. Robins, M.D.
Wilson G. Smillie, M.D.

Subcommittee on Recruitment of Public Health Personnel

Franklyn B. Amos, M.D., Chairman, State Office Bldg., Albany 1, N. Y.
E. G. McGavran, M.D., Referee, University of North Carolina School of Public Health, Chapel Hill, N. C.
E. Mildred Beisel, R.N.
William C. Gibson, C.E.
Jack C. Haldeman, M.D.
Richard H. Mattox
John H. Venable, M.D.

STUDY COMMITTEE ON RECRUITMENT OF MEDICAL PERSONNEL

John H. Venable, M.D., Chairman, State Dept. of Public Health, Atlanta 3, Ga.
Edward H. Cohart, M.D.
Robert E. Coker, Jr., M.D.
John E. Heustis, M.D.

Subcommittee on Salary Study

Robert G. Webster, Chairman-Referee, 760 Market St., San Francisco 2, Calif.
Franklin B. Caffee
Carl L. Erhardt
Thomas R. Hood, M.D.
Sam A. Kimble
Nell McKeever
Karl M. Mason
Mary E. Parker, R.N.
Perry F. Prather, M.D.

Committee on Research and Standards

Malcolm H. Merrill, M.D., Chairman, State Dept. of Public Health, San Francisco 2, Calif. (1956)
Reginald M. Atwater, M.D., Secretary, 1790 Broadway, New York 19, N. Y.

Solomon J. Axelrod, M.D. (1957)
Sidney S. Chipman, M.D. (1956)
James P. Dixon, Jr., M.D. (1957)
C. Howe Eller, M.D. (1956)
Lloyd Florio, M.D., (1955)
Armand Frappier, M.D. (1955)
Bernard G. Greenberg, Ph.D. (1956)
William McD. Hammon, M.D. (1955)
Ferdinand R. Hassler, M.D. (1955)
Robert F. Korns, M.D. (1955)
William H. Sebrell, Jr., M.D. (1956)
Joseph E. Smadel, M.D. (1957)
Capt. Van C. Tipton, MC, USN (1957)
Jerome B. Trichter (1957)

Consultants:
Haven Emerson, M.D.
Abel Wolman, Dr. Eng.

Staff:
Francis B. Elder, Associate Secretary

Coordinating Committee on Laboratory Methods

Ferdinand R. Hassler, M.D. (Lab.)—Chairman, 3400 North Eastern, Oklahoma City, Okla.
M. Thomas Bartram, Ph.D. (F. & N.)
Howard L. Bodily, Ph.D. (Lab.)
Albert V. Hardy, M.D. (Lab.)
Edmund K. Kline, Dr.P.H. (Lab.)
Pearl L. Kendrick, Sc.D. (Lab.)
Seward E. Miller, M.D. (Lab.)
Walter D. Tiedeman (Eng. & San.)

Staff:
Francis B. Elder, Associate Secretary

SUBCOMMITTEE ON ANTIMICROBIAL AGENTS (DISINFECTANTS)

Nicholas D. Duffet, Ph.D. (Lab.)—Chairman, 32 Municipal Courts Bldg., St. Louis 3, Mo.
(Personnel to be appointed)

SUBCOMMITTEE ON APPLICATIONS OF PHAGE TYPING TECHNICS

Earle K. Borman (Lab.) Chairman— P.O. Box 2340, Hartford 1, Conn.
Jean-Marc Desranleau (Lab.) Secretary—1570 St. Huber St., Montreal, Que., Canada
John E. Blair, M.D.
Howard L. Bodily, Ph.D.
Evan T. Bynoe, Ph.D.
Marion B. Coleman

Philip R. Edwards, Ph.D.
William W. Ferguson, Ph.D.
Matthew H. Fusillo
George Gee Jackson, M.D.
Leslie P. Lansdown, M.D.
Robert I. Wise, M.D.

SUBCOMMITTEE ON APPROVAL OF CULTURE MEDIA

Leon Buchbinder, Ph.D. (Lab.)—Chairman, 125 Worth St., New York 13, N. Y.
M. Thomas Bartram, Ph.D. (F.&N.)
Luther A. Black, Ph.D. (Lab.)
Earle K. Borman (Lab.)
F. Wellington Gilcreas (Lab.)
Harry E. Goresline, Ph.D. (F.&N.)
Cornelius B. Kelly (Lab.)
Archie H. Robertson, Ph.D. (Lab.)

SUBCOMMITTEE ON DIAGNOSTIC PROCEDURES AND REAGENTS

Albert H. Harris, M.D. (Lab.)—Chairman, State Dept. of Health Laboratory, Albany 1, N. Y.
Howard L. Bodily, Ph.D. (Lab.)
Geoffrey Edsall, M.D. (Lab.)
James Gibbard (Lab.)
Ralph S. Muckenfuss, M.D. (Lab.)

SUBCOMMITTEE ON DIAGNOSTIC PROCEDURES FOR VIRUS AND RICKETTSIAL DISEASES

Thomas Francis, Jr., M.D. (Ep.)—Chairman, University of Michigan School of Public Health, Ann Arbor, Mich.
John C. Bugher, M.D. (Un.)
Gilbert Dalldorf, M.D. (Lab.)
John F. Enders, Ph.D. (Lab.)
Alto E. Feller, M.D. (Ep.)
Karl Habel, M.D. (Lab).
William McD. Hammon, M.D. (Ep.)
M. R. Hilleman, Ph.D.
Harold V. Johnson, M.D. (Lab.)
C. Henry Kempe, M.D.
Edwin H. Lennette, M.D. (Lab.)
Joseph L. Melnick, Ph.D.
Karl F. Meyer, M.D. (Ep.)
Robert F. Parker, M.D.
John R. Paul, M.D. (Ep.)
Geoffrey W. Rake, M.B. (Lab.)
Albert B. Sabin, M.D.
Jonas E. Salk, M.D. (Ep.)
T. F. McNair Scott, M.D.
Joseph E. Smadel, M.D. (Lab.)
Phillips Tygeson, M.D.

SUBCOMMITTEE ON LABORATORY EXAMINATION OF SHELLFISH

Cornelius B. Kelly, Jr. (Lab.)—Chairman, Public Health Service, Box 1028, Pensacola, Fla.
Kenneth R. Berquist (Lab.)
Leon Buchbinder, Ph.D. (Lab.)
Evan T. Bynoe, Ph.D. (Lab.)
Joseph A. McCarthy (Lab.)
Glenn G. Slocum, Ph.D. (F.&N.)

SUBCOMMITTEE ON LABORATORY METHODS FOR THE EXAMINATION OF AIR

F. Wellington Gilcreas (Lab.)—Chairman, State Dept. of Health Laboratory, Albany 1, N. Y.
Frederick H. Goldman, Ph.D. (O.H.)
Morris B. Jacobs, Ph.D. (O.H.)
Paul W. Kabler, M.D. (Lab.)
Alexander D. Langmuir, M.D. (Ep.)
William Lester, Jr., M.D. (Ep.)
Leslie Silverman, S.D.
Harold A. Whittaker (Eng. & San.)

SUBCOMMITTEE ON METHODS FOR THE MICROBIOLOGICAL EXAMINATION OF FOODS

Harry E. Goresline, Ph.D. (F.&N.)—Chairman, 1819 W. Pershing Road, Chicago 9, Ill.
M. Thomas Bartram, Ph.D. (F.&N.)
James A. Berry (F.&N.)
Edwin J. Cameron, Ph.D. (F.&N.)
Gail M. Dack, M.D. (Lab.)
John H. Etchells, Ph.D. (F.&N.)
F. W. Fabian, Ph.D. (F.&N.)
Harlow H. Hall, Ph.D. (F.&N.)
Matthew E. Highlands (F.&N.)
Lloyd B. Jensen, Ph.D. (F.&N.)
Cyril K. Johns, Ph.D. (Lab.)
Carl S. Pederson, Ph.D. (F.&N.)
Paul S. Prickett, Ph.D. (F.&N.)
B. E. Proctor, Ph.D. (F.&N.)
Archie H. Robertson, Ph.D. (Lab.)
John M. Sharf, Ph.D. (F.&N.)
Glenn G. Slocum, Ph.D. (F.&N.)
Oscar B. Williams, Ph.D. (F.&N.)

SUBCOMMITTEE ON REFERENCE METHODS FOR SYPHILIS SEROLOGY

John F. Mahoney, M.D. (Lab.)—Chairman, 125 Worth St., New York 13, N. Y.
R. H. Allen, M.D. (Lab.)
Earle K. Borman (Lab.)
John Cutler, M.D. (Ep.)
Ad Harris (Lab.)
Ferdinand R. Hassler, M.D. (Lab.)
John F. Kent, Ph.D. (Lab.)
Sidney Olansky, M.D. (Lab.)
E. L. Webb (Lab.)
Daniel Widelock, Ph.D. (Lab.)

SUBCOMMITTEE ON STANDARD METHODS FOR THE EXAMINATION OF DAIRY PRODUCTS

Luther A. Black, Ph.D. (Lab.)—Chairman, 4676 Columbia Parkway, Cincinnati 26, Ohio

M. Thomas Bartram, Ph.D. (F.&N.)
Irving H. Borts, M.D. (Lab.)
Leon Buchbinder, Ph.D. (Lab.)
O. A. Chiggoile
Cassius L. Clay
Paul R. Elliker, Ph.D.
Cyril K. Johns, Ph.D. (Lab.)
Curtis R. Joiner (Lab.)
David Levowitz, Ph.D. (Lab.)
C. A. Manthei, Ph.D.
Joseph C. Olson, Jr., Ph.D.
E. H. Parfitt, Ph.D. (Lab.)
Alternate: John C. Flake, Ph.D.
Archie H. Robertson, Ph.D. (Lab.)
Marvin L. Speck, Ph.D.
Ralph P. Tittsler, Ph.D.
Norman E. Yongue

SUBCOMMITTEE ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND SEWAGE

F. Wellington Gilcreas (Lab.)—Chairman, State Dept. of Health, Albany 1, N. Y.
Joseph A. McCarthy (Lab.)—Vice-Chairman, Lawrence Experiment Station, Lawrence, Mass.
Charles C. Croft, Sc.D. (Lab.)
Ralph L. France (F.&N.)
Floyd W. Hartmann, Sc.D. (Lab.)
Paul W. Kabler, M.D. (Lab.)
Ralph E. Noble (Lab.)
Theodore A. Olson (Lab.)
Z. John Ordal, Ph.D. (Lab.)
Michael J. Pelczar

Consultants:
Max Levine, Ph.D. (Lab.)
W. L. Mallmann, Ph.D. (Lab.)
Mac H. McCrady, D.Sc. (Lab.)
Marjorie S. Newman

Liaison Members:
Frank E. Clarke, American Society for Testing Materials
Ray L. Derby, American Water Works Association
Gail P. Edwards, Ph.D., Federation of Sewage and Industrial Wastes Associations

Subcommittee on Care of Cases of Communicable Diseases in General Hospitals

Alfred L. Burgdorf, M.D., Chairman, City Health Dept., Hartford, Conn.
Margaret E. Benson
Earle K. Borman
Ward L. Chadwick, M.D.
John M. Chapman, M.D.
Roy F. Feemster, M.D.
Horace L. Hodes, M.D.
Robert F. Korns, M.D.
Max B. Lurie, M.D.
Franklin H. Top, M.D.

Subcommittee on Chemical Poisons

George M. Wheatley, M.D., Chairman, 1 Madison Ave., New York, N. Y.
(Personnel to be appointed)

Subcommittee on Communicable Disease Control

John E. Gordon, M.D., Chairman, 695 Huntington Ave., Boston 15, Mass.
(Personnel to be appointed)

Subcommittee on Health Aspects of Air Pollution

John J. Phair, M.D., Chairman, University of Cincinnati College of Medicine, Cincinnati 19, Ohio
William A. Brumfield, M.D.
Leslie A. Chambers, Ph.D.
Jean Downes
C. Howe Eller, M.D.
F. Wellington Gilcreas
Leonard Greenburg, M.D.
Theodore F. Hatch
Frank Princi, M.D.
Helmuth H. Schrenk, Ph.D.
Harold A. Whittaker

Subcommittee on the Hygiene of Housing

C.-E. A. Winslow, Dr.P.H., Chairman, 333 Cedar St., New Haven, Conn.
M. Allen Pond, Co-Chairman, Public Health Service, Washington 25, D. C.
Charles S. Ascher
F. Stuart Chapin, Ph.D.
Martin Cherkasky, M.D.
Robert L. Davison
Thomas Fansler
Clarence W. Farrier
Kenneth Kassler
E. R. Krumbiegel, M.D.
Paul V. Lemkau, M.D.
Bleecker Marquette
Ollie A. Randall
Mary Rokahr
A. C. Shire
Donald Y. Solandt, M.D.
George A. Speer
Harold A. Whittaker
Joseph W. Willard
Huntington Williams, M.D.
Coleman Woodbury, Ph.D.

Executive Committee:
C.-E. A. Winslow, Dr.P.H., Chairman, 333 Cedar St., New Haven, Conn.
F. Stuart Chapin, Ph.D.
E. R. Krumbiegel, M.D.

M. Allen Pond
Huntington Williams, M.D.
Coleman Woodbury, Ph.D.

Staff:
Eleanor Watkins, Secretary, 321 Congress Ave., New Haven 11, Conn.

SUBCOMMITTEE ON HOUSING AND MENTAL HEALTH
F. Stuart Chapin, Ph.D., Chairman, 40 Shorewood Drive, Asheville, N. C.
Martin Cherkasky, M.D.
Reuben Hill, Ph.D.
Ralph J. Johnson
Andie L. Knutson, Ph.D.
Paul V. Lemkau, M.D.
James Montgomery

SUBCOMMITTEE ON HOUSING IN RELATION TO INTERNATIONAL COOPERATION
M. Allen Pond, Chairman, Public Health Service, Washington 25, D. C.
Jacob L. Crane
George M. Foster, Ph.D.
H. Van Zile Hyde, M.D.
D. H. K. Lee, M.D.
Donald Y. Solandt, M.D.
Anatole Solow
Harold A. Whittaker

SUBCOMMITTEE ON RURAL HOUSING
A. C. Shire, Chairman, 1749 E St., N.W., Washington, D. C.
Charles S. Ascher
Glenn H. Beyer
Roy J. Burroughs
J. Robert Dodge
Thomas Fansler
Walter C. McKain, Ph.D.
Mary Rokahr
A. C. Shire
Harold A. Whittaker
Coleman Woodbury, Ph.D.

Subcommittee on Laboratory Research on Multiple Antigens
Pearl L. Kendrick, Sc.D., Chairman, 109 S. Observatory St., Ann Arbor, Mich.
William E. Bunney, Ph.D.
Grace Eldering, Sc.D.
Johannes Ipsen, M.D.
Franklin H. Top, M.D.
Vladimir K. Volk, M.D.

Subcommittee on Radiological Health
Captain Van C. Tipton, MC, USN, Chairman, U. S. Naval Hospital, San Diego, Calif.
Daniel Bergsma, M.D.
Sergei Feitelberg, M.D.
Duncan A. Holaday
Samuel C. Ingraham, II, M.D.
Oliver A. Placak
William H. Ray

Subcommittee on Sanitation of Food Utensils
Jerome B. Trichter, Chairman, 125 Worth St., New York 13, N. Y.
A. W. Fuchs, C.E.
N. O. Gunderson, M.D.
Walter L. Mallmann, Ph.D.

ASSOCIATION COMMITTEES

Committee on Child Health
Samuel M. Wishik, M.D., Chairman, University of Pittsburgh Graduate School of Public Health, Pittsburgh 13, Pa. (1955)
Jessie M. Bierman, M.D. (1956)
Alice F. Brackett, R.N. (1957)
Paul B. Cornely, M.D. (1955)
John T. Fulton, D.D.S. (1957)
Louisa E. Haas (1956)
Icie Macy Hoobler, Ph.D. (1956)
Theodore H. Ingalls, M.D. (1956)
Joseph H. Kinnaman, M.D. (1956)
Samuel A. Kirk, Ph.D. (1955)
Paul V. Lemkau, M.D. (1955)
Charles L. Outland, M.D. (1955)
Rowland V. Rider, Sc.D. (1957)
Edward R. Schlesinger, M.D. (1957)
Lendon Snedeker, M.D. (1956)
Helen M. Wallace, M.D. (1957)

Staff:
Elinor F. Downs, M.D., Staff Director
Edith M. Boyd, Associate Secretary

ADVISORY GROUP ON GENERAL PRINCIPLES FOR COMMUNITY PROGRAMS FOR HANDICAPPED CHILDREN
Louis Spekter, M.D., Chairman, State Dept. of Health, Hartford 15, Conn.
Catherine Casey
Agnes Chamberlayne
Paul B. Cornely, M.D.
Carleton Dean, M.D.
Louise F. Galvin, M.D.
Paul Harper, M.D.
Louise Hayward, R.N.
Kenneth S. Landauer, M.D.
Gertrude Norcross
Ruth M. Olson, R.N.

R. Gerald Rice, M.D.
Harvey L. Shapiro
Mildred Stanton, Ph.D.
Samuel M. Wishik, M.D. (ex officio)

ADVISORY GROUPS ON SPECIFIC HANDICAPPING CONDITIONS OF CHILDREN

Cerebral Palsy
Samuel M. Wishik, M.D., Chairman, University of Pittsburgh Graduate School of Public Health, Pittsburgh 13, Pa.
Lenox D. Baker, M.D.
William Berenberg, M.D.
Viola E. Cardwell, R.N.
Burton Chance, Jr., M.D.
John Colman, M.D.
William Cooper, M.D.
Paul B. Cornely, M.D.
Eric Denhoff, M.D.
George P. Guibor, M.D.
Frances A. Hellebrandt, M.D.
Elizabeth B. Hurlock, Ph.D.
Paul V. Lemkau, M.D.
Romaine P. Mackie, Ph.D.
Meyer A. Perlstein, M.D.
Winthrop M. Phelps, M.D.
George A. Pollock, M.D.
Edward Press, M.D.
Janice Rafuse, M.D.
Raymond R. Rembolt, M.D.
R. Plato Schwartz, M.D.
Helen M. Wallace, M.D.
Harold Westlake, Ph.D.
Herman Yannet, M.D.

Cleft Lip and Cleft Palate
F. O. Graeber, M.D.
Thomas L. Hagan, D.D.S.
Theodore H. Ingalls, M.D.
Robert H. Ivy, D.D.S.
Herbert Koepp-Baker, Ph.D.
Elizabeth C. MacLearie
Jack Sabloff, M.D.
J. A. Salzmann, D.D.S.
Pauline G. Stitt, M.D.
Samuel M. Wishik, M.D. (ex officio)

Dento-Facial
Henry C. Sandler, D.M.D., Co-Chairman, Veterans Administration Hospital, Brooklyn 9, N. Y.
Joseph D. Eby, D.D.S., Co-Chairman, 121 E. 60th St., New York 22, N. Y.
Frederick R. Aldrick, D.D.S.
Herbert K. Cooper, D.D.S.
John T. Fulton, D.D.S.
Thomas L. Hagan, D.D.S.
Albert D. Kaiser, M.D.
George F. Munns, M.D.
Lowrie J. Porter, D.D.S.
J. A. Salzmann, D.D.S.
Helen M. Wallace, M.D.
Leuman M. Waugh, D.D.S.
Samuel M. Wishik, M.D. (ex officio)

Diabetes
Hugh L. C. Wilkerson, M.D., Chairman, 639 Huntington Ave., Boston, Mass.
Elizabeth Caso
A. L. Chute, M.D.
John T. Fulton, D.D.S.
Icie Macy Hoobler, Ph.D.
Robert L. Jackson, M.D.
Joseph H. Kinnaman, M.D.
R. Gerald Rice, M.D.
A. B. Rosenfield, M.D.
Albert R. Taylor, M.D.
Priscilla White, M.D.
Alfred Yankauer, M.D.
Samuel M. Wishik, M.D. (ex officio)

Emotional Disturbances
Herschel Alt
Alice F. Brackett, R.N.
Jules V. Coleman, M.D.
Ernest M. Gruenberg, M.D.
Louisa E. Haas
Amy Louise Hunter, M.D.
Roscoe P. Kandle, M.D.
Ruth Kotinsky, Ph.D.
Morris Krugman, Ph.D.
Paul V. Lemkau, M.D.
Erich Lindemann, M.D.
James F. Maddux, M.D.
Harold E. Mann, M.D.
W. Mason Mathews, Ph.D.
Marie Louise Pareti, M.D.
William C. Phillips
Doris Siegel
Robert L. Stubblefield, M.D.
Exie Elizabeth Welsch, M.D.
Renee Zindwer, M.D.
Samuel M. Wishik, M.D. (ex officio)

Epilepsy
Edward Davens, M.D., Co-Chairman, 2411 N. Charles St., Baltimore 18, Md.
William G. Lennox, M.D., Co-Chairman, 300 Longwood Ave., Boston 15, Mass.
Jessie M. Bierman, M.D.
Paul Dodds, M.D.
Louisa E. Haas
Theodore H. Ingalls, M.D.
Ursula G. Sanders, M.D.
Samuel M. Wishik, M.D. (ex officio)

Hearing Impairment
Jessie M. Bierman, M.D.
Norton Canfield, M.D.
Edward Davens, M.D.

Leo G. Doerfler, Ph.D.
Genevieve Drennen
Robert M. Foote, M.D.
Warren H. Gardner, Ph.D.
William G. Hardy, Ph.D.
Albert D. Kaiser, M.D.
Samuel A. Kirk, Ph.D.
Ella Langer, M.D.
Helmer R. Myklebust, Ed.D.
Charles L. Outland, M.D.
Jack Sabloff, M.D.
Alice Streng
Samuel M. Wishik, M.D. (ex officio)

Staff:
Franziska W. Racker, M.D.

Heart Disease and Rheumatic Fever
John W. Ferree, M.D., Chairman, 44 E. 23rd St., New York 10, N. Y.
Marjorie T. Bellows
Paul B. Cornely, M.D.
Madeline M. Donnelly, M.D.
Marcia Hays, M.D.
Frederick J. Lewy, M.D.
Rowland V. Rider, Sc.D.
Edward R. Schlesinger, M.D.
Louis Spekter, M.D.
Samuel M. Wishik, M.D. (ex officio)

Orthopedic and Neuromuscular
Helen M. Wallace, M.D., Chairman, 125 Worth St., New York 13, N. Y.
John F. Bell, M.D.
Alice F. Brackett, R.N.
Herbert R. Kobes, M.D.
Margaret Losty, R.N.
W. E. Noblin, Jr., M.D.
Robert Siffert, M.D.
Lendon Snedeker, M.D.
Jerome Tobis, M.D.
Samuel M. Wishik, M.D. (ex officio)

Visual Impairment and Other Eye Disturbances
Franklin M. Foote, M.D., Chairman, 1790 Broadway, New York 19, N. Y.
Beatrice Hall
Margot Deckert Hartmann, M.D.
Joseph H. Kinnaman, M.D.
Samuel A. Kirk, Ph.D.
Charles L. Outland, M.D.
Frances C. Rothert, M.D.
Maurice D. Vest, M.D.
Marjorie A. C. Young
Samuel M. Wishik, M.D. (ex officio)

Committee on Constitution and By-Laws
Myron E. Wegman, M.D., Chairman, 1501 New Hampshire Ave., N.W., Washington 6, D. C.
Alexander D. Langmuir, M.D.
Hugh R. Leavell, M.D.
Berwyn F. Mattison, M.D.
Roy J. Morton, C.E.
George O. Pierce
Margaret L. Shetland, R.N.

Committee on Resolutions
Ruth R. Puffer, Dr.P.H., Chairman, 1501 New Hampshire Ave., N.W., Washington 6, D. C.
James R. Amos, M.D.
Nathaniel H. Cooper, M.D.
William W. Frye, M.D.
E. Harold Hinman, M.D.
Bleecker Marquette
Dwight F. Metzler, C.E.
Frank Princi, M.D.

Committee of Tellers
Frederic W. Nordsiek, Chairman, 521 W. 57th St., New York 19, N. Y.
Martha L. Clifford, M.D.
Louis Weiner

Editorial Board
John D. Porterfield, M.D., Chairman, 306 State Dept. Bldg., Columbus 15, Ohio (1955)
Reginald M. Atwater, M.D., Managing Editor
Howard W. Ennes (1957)
Mark D. Hollis, C.E. (1955)
Ruth W. Hubbard, R.N. (1956)
Edmund K. Kline, Dr.P.H. (1957)
Raymond S. Patterson, Ph.D., Associate Editor
George Rosen, M.D. (1956)
Abel Wolman, Dr.Eng., Editor

Joint Committee on Common Ground Between Public Health and the Behavioral Sciences

American Psychological Association
Gordon W. Allport, Ph.D.
Andie Knutson, Ph.D.
Alvin Frederick Zander, Ph.D.

APHA
Alfred L. Frechette, M.D.
Ira V. Hiscock, Sc.D.
George Rosen, M.D.

(Representatives from American Sociological Society and American Anthropological Association to be appointed)

Lasker Awards Committee
Gaylord W. Anderson, M.D., Chairman, 121 Millard Hall, University of Minnesota, Minneapolis 14, Minn.
George D. W. Cameron, M.D.
Pearl L. Kendrick, Sc.D.

Robert F. Loeb, M.D.
Currier McEwen, M.D.
George Moore, M.D.
Lon W. Morrey, D.D.S.
Roy J. Morton, C.E.
Leonard A. Scheele, M.D.
Charles E. Smith, M.D.
Irving S. Wright, M.D.

Liaison Committees with Association of State and Territorial Health Officers

APHA
Herman E. Hilleboe, M.D.
John W. Knutson, D.D.S.
Lawrence J. Peterson

ASTHO
Daniel Bergsma, M.D.
Harold M. Erickson, M.D.
J. W. R. Norton, M.D.

Liaison Committee with National League for Nursing

APHA
Ruth Freeman, Ed.D.
Janice E. Mickey, R.N.
Roscoe P. Kandle, M.D.
Alternate: Paul A. Harper, M.D.

Nominating Committee for Association Officers and Executive Board Members

M. Allen Pond, Chairman, Public Health Service, Washington 25, D. C.
Kenneth A. Easlick, D.D.S.
Herman E. Hilleboe, M.D.
Roy J. Morton, C.E.
John D. Porterfield, M.D.

Nominating Committee for Elective Councilors

Andrew Hedmeg, M.D., Chairman, Civil Courts Bldg., New Orleans, La.
Clarence L. Brumback, M.D., Health Officers Section
Dwight F. Metzler, C.E., Engineering and Sanitation Section
Marjorie M. Morrison, Food and Nutrition Section
John J. Phair, M.D., Epidemiology Section
J. V. Irons, Sc.D., Laboratory Section
Donald J. Galagan, D.D.S., Dental Health Section
Howard West, Statistics Section
Morey R. Fields, Ed.D., Public Health Education Section
Louis S. Reed, Ph.D., Medical Care Section
O. A. Sander, M.D., Occupational Health Section
Madeline M. Donnelly, M.D., Maternal and Child Health Section
Florence L. Fogle, R.N., School Health Section
Ella E. McNeil, R.N., Public Health Nursing Section

Program Committee

Reginald M. Atwater, M.D., Chairman, 1790 Broadway, New York 19, N. Y.
Wendell R. Ames, M.D.
Daniel Bergsma, M.D.
E. Gurney Clark, M.D.
Lewis J. Cralley, Ph.D.
Hugh L. Dwyer, M.D.
Howard W. Ennes
John W. Ferree, M.D.
Helen L. Fisk, R.N.
Ernest M. Gruenberg, M.D.
William M. Haenszel
Robert H. Hamlin, M.D.
John J. Hanlon, M.D.
Albert V. Hardy, M.D.
Thomas R. Hood, M.D.
George James, M.D.
Kenneth S. Landauer, M.D.
Granville W. Larimore, M.D.
Morton L. Levin, M.D.
S. S. Lifson
Herbert Notkin, M.D.
Lucretia A. Saunders
Carl L. Sebelius, D.D.S.
Elena M. Sliepcevich
Clarence I. Sterling, Jr.
Ray E. Trussell, M.D.
Helen E. Walsh
Alfred Yankauer, M.D.

Scientific Exhibits Committee

S. S. Lifson, Chairman, 1790 Broadway, New York 19, N. Y.
Horace A. Brown
Francis B. Elder
Morey R. Fields, Ed.D.
Andie L. Knutson, Ph.D.
Granville W. Larimore, M.D.
Robert A. Lightburn
Horace L. Sipple, Ph.D.
Willimina R. Walsh

Sedgwick Memorial Medal Committee

W. G. Smillie, M.D., Chairman, 1300 York Ave., New York 21, N. Y.
Rodney R. Beard, M.D.
Leroy E. Burney, M.D.
Herman E. Hilleboe, M.D.
Roscoe P. Kandle, M.D.
Malcolm H. Merrill, M.D.
Marion W. Sheahan, R.N.

SECTION COMMITTEES

Dental Health Section

Committee on Curriculum Content of Courses in Dental Public Health and Preventive Dentistry
Donald J. Galagan, D.D.S., Chairman, Public Health Service, Washington 25, D. C.

SUBCOMMITTEE ON DENTAL SCHOOLS
Joseph F. Volker, D.D.S.
Robert L. Weiss, D.D.S.

SUBCOMMITTEE ON SCHOOLS OF DENTAL HYGIENE
Belle C. Fiedler
Elizabeth M. Warner

Committee on Evaluation Schedule for Local Dental Health Programs
George A. Nevitt, D.D.S., Chairman, Public Health Service, San Francisco, Calif.
Harry W. Bruce, Jr., D.D.S.
Arthur Bushel, D.D.S.
David F. Striffler, D.D.S.

Committee on Field Training for Public Health Dentists
Philip E. Blackerby, Jr., D.D.S., Chairman, 258 Champion St., Battle Creek, Mich.
David B. Ast, D.D.S.
John E. Chrietzberg, D.D.S.
Kenneth A. Easlick, D.D.S.

Committee on Local Arrangements
Willard R. Bellinger, D.D.S., Chairman, State Board of Health, Topeka, Kans.
David Brock, D.D.S.
Charles J. Gillooly, D.D.S.
Allen O. Gruebbel, D.D.S.
Charles E. Presnell, D.D.S.

Committee on Trends in Public Health Dentistry
John T. Fulton, D.D.S., Chairman, Children's Bureau, Washington 25, D. C.
Philip E. Blackerby, Jr., D.D.S.
A. L. Russell, D.D.S.

By-Laws Committee
John E. Chrietzberg, D.D.S., Chairman, State Dept. of Public Health, Atlanta, Ga.
William P. Kroschel, D.D.S.
Richard C. Leonard, D.D.S.

Membership Committee
John T. Fulton, D.D.S., Chairman, Children's Bureau, Washington 25, D. C.
Bruce D. Forsythe, D.D.S.
Glenn T. Mitton, D.D.S.
Gertrude M. Sinnett
Zachary M. Stadt, D.M.D.

Nominating Committee
Kenneth A. Easlick, D.D.S., Chairman, University of Michigan School of Dentistry, Ann Arbor, Mich.
Thomas L. Hagan, D.D.S.
Hugh R. McLaren, D.D.S.

Resolutions Committee
Thomas W. Clune, D.M.D., Chairman, 323 State Office Bldg., Providence, R. I.
Clifton O. Dummett, D.D.S.
Lester A. Gerlach, D.D.S.
W. Philip Phair, D.D.S.

Section Committee to Michigan Workshop
Walter J. Pelton, D.D.S.
Fred Wertheimer, D.D.S.
J. M. Wisan, D.D.S.

Engineering and Sanitation Section

Committee on Air Hygiene
Harold A. Whittaker, Chairman, 2101 Constitution Ave., N.W., Washington, D. C.
Gordon M. Fair
Sol Pincus, C.E.
Frank Princi, M.D.
Arthur C. Stern
H. Wexler, D.Sc.

Advisers:
Epidemiology Section
Alexander D. Langmuir, M.D.
Laboratory Section
Stuart Mudd, M.D.
Occupational Health Section
C. P. Yaglou

Committee on Bathing Places (Joint with the Conference of State Sanitary Engineers)
Warren J. Scott, Chairman, State Office Bldg., Hartford, Conn.
Alfred H. Fletcher
Eric W. Mood
Albert H. Stevenson

Advisers:
Epidemiology Section
Robert F. Korns, M.D.
Laboratory Section
Walter L. Mallmann, Ph.D.

Committee on Civil Defense
William H. Cary, Jr., C.E., Chairman, District Department of Public Health, Washington 1, D. C.
Andrew T. Dempster
Earl Devendorf
Ernest G. Eggert
Raymond J. Faust
Gordon E. McCallum, C.E.
T. T. Quigley

Committee on Committees
Earle W. Sudderth, Chairman, 4815 Ross Ave., Dallas, Tex.
Justin M. Andrews, Sc.D.
Dwight F. Metzler, C.E.

Committee on Exploration of Research Needs
John C. Geyer, Dr.Eng., Chairman, 16 Latrobe Hall, Baltimore 18, Md.
Earnest Boyce, C.E.
Emil T. Chanlett
Rolf Eliassen, Sc.D.
Harold B. Gotaas, Sc.D.
Edward W. Moore
Theodore A. Olson
Donald J. Schliessmann

Committee on Food Sanitation
Tom S. Gable, Chairman, University of Nebraska, Lincoln 8, Neb.
Richard G. Bond
Benjamin Buchalter
M. B. Crabill
Ralph L. Tarbett
Jerome B. Trichter
Ray B. Watts

Committee on Hospital Facilities
Donald L. Snow, Chairman, National Institutes of Health, Bethesda, Md.
Malcolm C. Hope
Samuel P. Kingston
Louva G. Lenert
Elmer C. Slagle

Committee on Housing (Joint witth Conference of Municipal Public Health Engineers)
Ralph J. Johnson, Chairman, Dept. of Health, Education and Welfare, Washington 25, D.C.
J. Robert Cameron
Morton S. Hilbert, C.E.
Dwight F. Metzler, C.E.
J. W. Wakefield

Committee on Industrial Environment, Joint
Engineering and Sanitation Section
Lt. Col. Alvin F. Meyer, Jr., USAF, MSC, Chairman, 1701 S. 78th St., Omaha, Neb.
Robert Brown
Keith A. Fitch
William T. Ingram

Occupational Health Section
Charles D. Yaffe, Vice-Chairman
Harry E. Seifert, C.E.
Emerson Venable

Committee on Marine Food and Incrustacea
Richard S. Green, Chairman, Public Health Service, Washington 25, D. C.
Leo Fox
Joseph B. Glancy
Clarence W. Klassen
Richard Messer
Thurlow C. Nelson, D.Sc.
Charles E. Renn, Ph.D.
Edwin L. Ruppert
Leslie K. Sherman
Harold Udell
Edward Wright

Committee on Membership and Fellowship
Joel C. Beall, Chairman, 845 Hemlock St., Macon, Ga.
H. E. Miller, Consultant
Richard G. Bond
J. Robert Cameron
Lewis Dodson
George H. Eagle
Paul S. Fox
Jose A. Jove
Theodore J. Lafreniere, C.E.
Benn J. Leland
Robert G. McCall
Eric W. Mood
Carl C. Potter
Frank M. Stead
Harold C. Taylor
Meredith H. Thompson, Dr.Eng.

Committee on Milk Sanitation, Joint
Morton S. Hilbert, C.E., Chairman, Wayne County Health Dept., Eloise, Mich.
Harold J. Barnum
Edwin Ludewig
Karl M. Mason
Samuel I. Reed

H. L. Thomasson
Harold Wainess
Health Officers Section
T. E. Cato, M.D.
J. W. Erwin, M.D.
Frank J. Hill, M.D.

Committee on Municipal Public Health Engineering
J. Robert Cameron, Chairman, 659 Cherokee St., Denver, Colo.
A. P. Bell
Sidney F. Dommes, Jr.
Henry E. Drumwright
William R. Hardy
Arthur H. Herberger, C.E.
Morton S. Hilbert, C.E.
Benn J. Leland
Guy M. Tate, Jr.
Norman M. Winch

Committee on Public Relations in Sanitation
Henry E. Drumwright, Chairman, City Hall Annex, Dallas, Tex.
William T. Ballard
Cecilia C. Conrath
Curtiss M. Everts, Jr.
W. A. Hardenbergh
Morton S. Hilbert, C.E.
Guy M. Tate, Jr.

Committee on Radiological Health
James G. Terrill, Jr., Chairman, Public Health Service, Washington 25, D. C.
Emil C. Jensen
Francis W. Kittrell
O. M. Bizzell, Alternate
John C. Soet

Committee on Resolutions
(Personnel to be appointed)

Committee on Rural Sanitation
John E. Kiker, Jr., Chairman, University of Florida, Gainesville, Fla.
A. S. Best
Robert N. Clark, C.E.
Robert W. Lamberton
Louva G. Lenert
Harvey F. Ludwig
Joseph A. Salvato, Jr.
James R. Simpson
Samuel R. Weibel

Committee on School Sanitation
Ivan F. Shull, Chairman, State Board of Health, Lawrence, Kans.
George H. Eagle
Maurice A. Shapiro
Edward L. Stockton

Committee on Sewage Disposal
Ralph E. Fuhrman, Chairman, 306 District Bldg., Washington 4, D. C.
Paul Bolton
F. E. DeMartini
Curtiss M. Everts, Jr.
Chesley F. Garland, Dr.Eng.
Henry J. Ongerth
Emanuel H. Pearl, C.E.
Harvey G. Rogers

Committee on Training
William C. Gibson, Chairman, 109 S. Observatory St., Ann Arbor, Mich.
Harold S. Adams
A. Harry Bliss
Herbert M. Bosch
Leon A. Bradley, Ph.D.
Gilbert H. Dunstan
James A. King, Jr.
Harry E. Miller
Edward L. Stockton

SUBCOMMITTEE ON CONTINUED EDUCATION
Harry E. Miller, Chairman, 109 S. Observatory St., Ann Arbor, Mich.
Ralph C. Barnes
Claud A. Bosworth
Robert A. Bowman
Olen C. Carter
Emil T. Chanlett
B. Russell Franklin
Sam M. Houston, Ph.D.
Howard Y. McClasky, Ph.D.
Meredith H. Thompson, Dr.Eng.

SUBCOMMITTEE ON GRADUATE ACADEMIC EDUCATION
A. Harry Bliss, Chairman, University of California at Los Angeles, Los Angeles 24, Calif.
Herbert M. Bosch, Co-Chairman, University of Minnessota School of Public Health, Minneapolis, Minn.
Harold S. Adams
Richard G. Bond
Leon A. Bradley, Ph.D.
Emil T. Chanlett
Gilbert H. Dunstan
Alfred H. Fletcher
Ralph L. France
Herbert H. Hasson
John E. Kiker, Jr.
Arthur P. Miller, C.E.

SUBCOMMITTEE ON UNDERGRATUATE ACADEMIC EDUCATION
Leon A. Bradley, Ph.D., Chairman, 549 State House, Boston 33, Mass.
Herbert J. Dunsmore
Samuel H. Hopper, Ph.D.
John E. Kiker, Jr.

Walter S. Mangold
Meredith H. Thompson, Dr.Eng.

Committee on Vector Control
John M. Henderson, C.E., Chairman, P. O. Box 769, Savannah, Ga.
George H. Bradley, Ph.D.
F. E. Gartrell
Wesley E. Gilbertson
Harold F. Gray
John A. Mulrennan
Theodore A. Olson
Richard Peters
Fred H. Stutz

Committee on Water Supply
E. A. Reinke, Chairman, 2180 Milvia St., Berkeley 4, Calif.
Russell L. Culp
Ray L. Derby
George G. Fassnacht
Raymond J. Faust
William Gahr
John Vogt

Nominating Committee
George O. Pierce, Chairman, 107 N. Wayne St., Arlington 1, Va.
William R. Hardy
Mitchell P. Mondala
Ivan F. Shull
Clarence I. Sterling, Jr.

Policy Advisory Committee to the Section Council
J. Robert Cameron, Chairman, 659 Cherokee St., Denver 2, Colo.
Morton S. Hilbert, C.E., Vice-Chairman
A. Harry Bliss
W. P. Boylston
William H. Cary, Jr., C.E.
Charles R. Cox
Curtiss M. Everts, Jr.
William R. Hardy
E. Russell Jackson
Ferdinand A. Korff
George W. Marx, C.E.
Harry E. Miller
Mitchell P. Mondala
B. A. Poole, C.E.
Harold B. Robinson
Edwin L. Ruppert
Guy M. Tate, Jr.
Ray Watts

Epidemiology Section

Committee on Air Hygiene (to cooperate with the Committee on Air Hygiene of the Engineering and Sanitation Section)

Adviser:
Alexander D. Langmuir, M.D.

Committee on Bathing Places (to cooperate with the Committee on Bathing Places of the Engineering and Sanitation Section)

Adviser:
Robert F. Korns, M.D.

Food and Nutrition Section

Committee on Chemicals Introduced in Foods
Harold R. Sandstead, M.D., Chairman, National Institutes of Health, Bethesda, Md.
Franklin C. Bing, Ph.D.
F. C. Blanck, Ph.D.
Bernard L. Oser, Ph.D.
Bernard E. Proctor, Ph.D.
Glenn G. Slocum, Ph.D.

Committee on Membership and Fellowship
John H. Browe, M.D., Chairman, 39 Columbia St., Albany, N. Y.
Ansta Barr
Lloyd A. Hall, D.Sc.
Eugenia Whitehead, D.Sc.
Everett R. Wolford

Committee on Misleading Information on Food and Nutrition
Robert S. Goodhart, M.D., Chairman, 15 East 58th St., New York 22, N. Y.
Bertlyn Bosley, Ph.D.
Frederic W. Nordsiek

Committee on Nutrition Practices
Alice H. Smith, Chairman, State Dept. of Health, Lansing 4, Mich.
Ruth E. Brennan
Barbara McDonald

Nominating Committee
Marjorie Morrison, Chairman, State Board of Health, Jacksonville, Fla.
Adelia W. Beeuwkes
Harry E. Goresline, Ph.D.
Henry R. Kreybill, Ph.D.

Resolutions Committee
Fred C. Baselt, C.E., Chairman, 100 Park Ave., New York 17, N. Y.
James M. Hundley, M.D.
Mildred E. Neff
Paul H. Tracy, Ph.D.

Health Officers Section

Committee on Coordination of Preventive and Curative Medicine, Joint

Health Officers Section
Harry L. Chant, M.D.
Alfred L. Frechette, M.D.
Roscoe P. Kandle, M.D.
James C. Malcolm, M.D.
Berwyn F. Mattison, M.D.
William C. Spring, M.D.
William H. F. Warthen, M.D.
Carl A. Wilzbach, M.D.

Medical Care Section
George A. Silver, M.D., Chairman, 3455 Steuben Ave., New York 67, N. Y.
Sophia Bloom
Lester Breslow, M.D.
Martin Cherkasky, M.D.
Jacob Horowitz, M.D.
Lucile Petry Leone, R.N.
Henry B. Makover, M.D.
Milton I. Roemer, M.D.
Hiram Sibley

Committee on Evaluation (to cooperate with the Committee on Evaluation of the Statistics Section)

Advisers:
Archibald S. Dean, M.D.
C. Howe Eller, M.D.

Committee on Milk Sanitation, Joint

Engineering and Sanitation Section
Morton S. Hilbert, C.E., Chairman, Wayne County Health Dept., Eloise, Mich.
Harold J. Barnum
Edwin Ludewig
Karl M. Mason
Samuel I. Reed
H. L. Thomasson
Harold Wainess

Health Officers Section
T. E. Cato, M.D.
J. W. Erwin, M.D.
Frank J. Hill, M.D.

Sectional Committee on Professional Education

Margaret W. Barnard, M.D., Chairman, 600 W. 168th St., New York 32, N. Y.
C. Howe Eller, M.D.
Ben Freedman, M.D.
Henry R. O'Brien, M.D.
William P. Richardson, M.D.
Vernon M. Winkle, M.D.

Laboratory Section

Committee on Air Hygiene (to cooperate with the Committee on Air Hygiene of the Engineering and Sanitation Section)

Adviser:
Stuart Mudd, M.D.

Committee on Bathing Places (to cooperate with the Committee on Bathing Places of the Engineering and Sanitation Section)

Adviser:
Walter L. Mallmann, Ph.D.

Committee on Escherichia coli
Erwin Neter, M.D., Chairman, Children's Hospital, Buffalo, N. Y.
William H. Ewing, Ph.D.
William W. Ferguson, Ph.D.
Major C. D. Graber, MSC
Warren E. Wheeler, M.D.

Committee on Laboratory Infections and Accidents
S. Edward Sulkin, Ph.D., Chairman, 2211 Oaklawn Ave., Dallas 4, Tex.
Esmond R. Long., M.D.
Robert S. Pike, Ph.D.
M. Michael Sigel, Ph.D.
Charles E. Smith, M.D.
Arnold G. Wedum, M.D.

Committee on Professional Standards of Laboratory Workers
Edmund K. Kline, Dr.P.H., Chairman, Box 573, Olean, N. Y.
Albert V. Hardy, M.D.
William Levin, Dr.P.H.

Laboratory Section Archivist
Anna M. Sexton, State Dept. of Health, Albany 1, N. Y.

Nominating Committee
Pearl L. Kendrick, Sc.D., Chairman 109 S. Observatory St., Ann Arbor, Mich.
Evan T. Bynoe, Ph.D.
Irving Gord, M.D.
Albert V. Hardy, M.D. (ex officio)
Alfred S. Lazarus, Ph.D.
Erwin Neter, M.D.

See Coordinating Committee on Laboratory Methods under the Committee on Research and Standards for Laboratory Methods Committees and their Personnel.

Maternal and Child Health Section

Committee on Recruitment of Members and Fellows
Edward Davens, M.D., Chairman, 2411 N. Charles St., Baltimore 18, Md.
Madeline M. Donnelly, M.D.
Louise F. Galvin, M.D.
Frederick O. Graeber, M.D.
Marie-Louise Pareti, M.D.
Donaldson F. Rawlings, M.D.
Hilla Sheriff, M.D.
Louis Spekter, M.D.
Maurice C. Vest, M.D.

Committee on Research
Martha L. Clifford, M.D., Acting Chairman, State Dept. of Health, Hartford, Conn.
Jessie M. Bierman, M.D.
Sidney S. Chipman, M.D.
John C. Cobb, M.D.
Marian M. Crane, M.D.
Paul A. Harper, M.D.
Amy L. Hunter, M.D.
Milton D. Levine, M.D.
John A. Lichty, M.D.
Margaret A. Losty, R.N.
Herbert C. Miller, M.D.
Edward Press, M.D.
Elizabeth Kirk Rose, M.D.
Loyd W. Rowland, Ph.D.
Harold C. Stuart, M.D.
Maurice C. Vest, M.D.
Helen M. Wallace, M.D.
John Whitridge, Jr., M.D.
Myron E. Wegman, M.D.
Samuel M. Wishik, M.D.
Alfred Yankauer, M.D.

Nominating Committee
Paul R. Ensign, M.D., Chairman, State Board of Health, Helena, Mont.
Goldie B. Corneliuson, M.D.
Edward Davens, M.D.
Edythe P. Hershey, M.D.
Samuel B. Kirkwood, M.D.
Frederic M. Kriete, M.D.

Program Committee
Alfred Yankauer, M.D., Chairman, 39 Columbia St., Albany 7, N. Y.
Sidney S. Chipman, M.D.
Leslie Corsa, M.D.
Paul R. Ensign, M.D.
Helen B. Fraser, M.D.
Paul A. Harper, M.D.
Harold Jacobziner, M.D.
Arthur Lesser, M.D.
John A. Lichty, M.D.
Georgia B. Perkins, M.D.
Elizabeth Kirk Rose, M.D.
Samuel M. Wishik, M.D.

Medical Care Section

Committee on Coordination of Preventive and Curative Medicine, Joint

Health Officers Section
Harry L. Chant, M.D.
Alfred L. Frechette, M.D.
Roscoe P. Kandle, M.D.
James C. Malcolm, M.D.
Berwyn F. Mattison, M.D.
William C. Spring, Jr., M.D.
William H. F. Warthen, M.D.
Carl A. Wilzbach, M.D.

Medical Care Section
George A. Silver, M.D., Chairman, 3455 Steuben Ave., New York 67, N. Y.
Sophia Bloom
Lester Breslow, M.D.
Martin Cherkasky, M.D.
Jacob Horowitz, M.D.
Lucile Petry Leone, R.N.
Henry B. Makover, M.D.
Milton I. Roemer, M.D.
Hiram Sibley

Committee on Medical Care Implications of Workmen's Compensation, Joint

Medical Care Section
- Leonard J. Goldwater, M.D.
- John E. F. Hastings, M.D.
- Jerome Pollack

Occupational Health Section
- (Personnel to be appointed)

Committee on Medical Care Statistics, Joint

Medical Care Section
- Franz Goldmann, M.D., Chairman, 55 Shattuck St., Boston, Mass.
- James P. Dixon, Jr., M.D.
- Margaret C. Klem
- Charles A. Metzner, Ph.D.
- Dean W. Roberts, M.D.
- C. Rufus Rorem, Ph.D.

Statistics Section
- Neva R. Deardorff, Ph.D., Secretary, 7 East 12 St., New York, N. Y.
- Isidore Altman, Ph.D.
- Antonio Ciocco, D.Sc.
- Selwyn D. Collins, Ph.D.
- Morton Robins
- Louis Weiner

Committee on Nominations
- Louis S. Reed, Ph.D., Chairman, Public Health Service, Washington 25, D. C.
- Frank F. Furstenburg, M.D.
- W. Glyn Myers
- Hiram Sibley
- Mary S. Weaver
- Herbert Notkin, M.D. (ex officio)

Committee on Rehabilitation
- Kenneth E. Pohlmann, Chairman, 907 15th St., N.W., Washington 5, D. C.
- Eleanor J. Bader
- R. G. Beachley, M.D.
- Bernard D. Daitz, Ph.D.
- Joseph H. Gerber, M.D.
- John A. Lewis, Jr., M.D.
- Ann Switzer
- Frederick A. Whitehouse, Ph.D.
- Elton B. Whitten

Occupational Health Section

Committee on Air Hygiene (to cooperate with the Committee on Air Hygiene of the Engineering and Sanitation Section)

Adviser:
- Stuart Mudd, M.D.

Committee on Chemical Procedures
- Morris B. Jacobs, Ph.D., Chairman, 130 E. 101 St., New York 29, N. Y.
- Dohrman H. Byers
- Lester V. Cralley, Ph.D.
- Charles J. DeSimone
- William G. Fredrick, Sc.D.
- Frederick H. Goldman, Ph.D.
- Felix H. Pretsch
- Abraham Wallach, C.E.

Subcommittee on Determination of Lead in Air
- R. R. Sayers, M.D., Chairman, City Health Dept., Baltimore, Md.
- Jacob Cholak, Ch.E.
- Grant S. Winn, Ph.D.

Committee on Industrial Environment, Joint

Engineering and Sanitation Section
- Lt. Col. Alvin F. Meyer, Jr., USAF, MSC, Chairman, 1701 S. 78 St., Omaha, Neb.
- Robert Brown
- Keith A. Fitch
- William T. Ingram

Occupational Health Section
- Charles D. Yaffe, Vice-Chairman, 1014 Broadway, Cincinnati, Ohio
- Harry E. Seifert, C.E.
- Emerson Venable

Committee on Medical Care Implications of Workmen's Compensation, Joint

Medical Care Section
- Leonard J. Goldwater, M.D.
- John E. F. Hastings, M.D.
- Jerome Pollack

Occupational Health Section
- (Personnel to be appointed)

Committee on Pneumoconiosis
- O. A. Sander, M.D., Chairman, 710 N. Plankinton Ave., Milwaukee 3, Wis.
- R. D. Appleford, M.D.
- Leonard Greenburg, M.D.
- Theodore F. Hatch
- Leon Lewis, M.D.
- Richard D. Mudd, M.D.
- Everett W. Probst, M.D.
- Joseph Shilen, M.D.
- Arthur J. Vorwald, M.D.

Committee on Scope of Activities of the Section
Gilbeart H. Collings, Jr., M.D., Chairman, 417 N. Pine St., Florence, Ala.
Herman J. Bennett, M.D.
Henry N. Doyle
Lewis W. Fetzer, Ph.D.
William J. McConnell, M.D.
John C. Soet

Committee on Toxic Chemicals
Heinrich Brieger, M.D., Chairman, 1025 Walnut St., Philadelphia 7, Pa.
Elston L. Belknap, M.D.
Lt. Herbert E. Christensen, MSC
William G. Fredrick, Sc.D.
Harry F. Schulte
George C. Stoecker
John D. Vaden
Elmer P. Wheeler

Public Health Education Section

Committee on Assistance to Public Libraries
Alfred E. Kessler, Chairman, 615 N. Alabama St., Indianapolis, Ind.
Graydon Dorsch, Co-Chairman

Committee on Health Education in Medical Care Areas
Arthur Kneerim, Chairman, 1 Madison Ave., New York 10, N. Y.
(Co-Chairman to be appointed)

Committee on Health Education in Special Subject Areas
Alma J. Baynard, Chairman, 211 W. Coulter St., Philadelphia, Pa.
(Co-Chairman to be appointed)

Committee on Identification of Common Principles
Mabel E. Rugen, Ph.D., Chairman, 109 S. Observatory St., Ann Arbor, Mich.
(Co-Chairman to be appointed)

Committee on Membership
George A. Kenny, Chairman, 110 Hess Ave., Warwick, R. I.
Sara C. Stice, Co-Chairman

Committee on Orientation of New Members
Marie F. Gately, Chairman, City Dept. of Health, Boston 14, Mass.
Jane G. Jones, Co-Chairman

Committee on Relationships with Public Health Education Sections of Branches and State Associations
Margaret L. Blizard, Chairman, 443 Winter St., Norwood, Mass.
(Co-Chairman to be appointed)

Committee on Research and Evaluation
Norbert Reinstein, Chairman, 215 Red Cross Bldg., Detroit 1, Mich.
Betty T. Bond, Co-Chairman

Committee on Resolutions
Donald A. Dukelow, M.D., Chairman, 272 Montclair St., Glen Ellyn, Ill.
Baxter K. Richardson, Co-Chairman

Committee on Revision of Manual of Procedures
Ruth Sumner, Ph.D., Chairman, Dept. of Health, Education and Welfare, Washington 25, D. C.

Newsletter Committee
Mildred M. Ihrig, Chairman, 600 Stockton St., San Francisco, Calif.
Scott K. Simond, Eugene L. Wittenborn, Co-Chairmen

Nominating Committee
Barnardine Cervinski, Chairman, Dept. of Health, Bismarck, N. D.
Mary Fitzgerald
Anne R. Grant
Catherine D. Hidy
Lucretia A. Saunders (ex officio)

Public Health Nursing Section

Committee on Membership, Eligibility and Fellowship
Edna J. Brandt, Chairman, 4337 15th Ave., N.E., Seattle 5, Wash.
Agnes B. Bowe
Roberta E. Foote, R.N.
Rena Haig, R.N.
Ruth E. Rives, R.N.
Jeannette Rosenstock, R.N.
Janet F. Walker

Committee on Section Affairs
Bosse B. Randle, R.N., Chairman, 1053 Franklin Ave., Garden City, L. I., N. Y.
Isobel Black
Anne Burns, R.N.
Helen L. Fisk, R.N.
Dorothy N. Kelly
Mary E. Parker, R.N.
Dorothy Simonson
Bernardine E. Striegel
Janet F. Walker
Barbara Wilcox, R.N.
Alberta B. Wilson, R.N.
Dorothy Wilson, R.N.

Nominating Committee
Lillian M. Derflinger, R.N., Chairman, Route 4, Lancaster, Ohio
Vera E. Fry, R.N.
Rosalie Giacoma
Hertha Larson

Resolutions Committee
(Personnel to be appointed)

School Health Section

Committee on Evaluation of School Health Programs. (Joint with American Association for Health, Physical Education & Recreation, and American School Health Association)
Wesley P. Cushman, D.Ed., Chairman, Ohio State University, Columbus 10, Ohio
Ruth Abernathy, Ph.D.
Roy A. Foster, H.S.D.
Edward B. Johns, Ed.D.
H. F. Kilander, Ph.D.
Dora A. Hicks, Ed.D.
Elsa Schneider

Committee on Hearing Conservation
C. Adele Brown, Chairman, 105 East 6th St., Oswego, N. Y.
Isaac P. Barrett, M.D.
Louis E. Di Carlo
Mildred E. Doster, M.D.
Leo Feichtner, M.D.
Margaret L. Geyer
Grayce B. Leidig, R.N.
Dorothy Lynch, R.N.
Adfur E. Maines, M.D.
Clarence B. O'Conner, M.D.
Thomas Tolan, M.D.
Alfred Yankauer, M.D.

Committee on Research
J. Keogh Rash, H.S.D., Chairman, Indiana University, Bloomington, Ind.
Amy Hinrichs
Howard S. Hoyman, Ed.D.
Leslie W. Irwin, Ph.D.
Hollis M. Leverett
Jennelle V. Moorhead
Warren H. Southworth, Dr.P.H.
Wesley M. Staton, Ed.D.
Arthur H. Steinhaus, Ph.D.

Committee on Rural School Health Services
Marian V. Miller, Chairman, 44 E. 23rd St., New York, N. Y.
Blanche Armstrong
Ira L. Ferguson, Ph.D.
Charles C. Hawkins, Ph.D.
Burt M. Kebric, Ed.D.
Marguerite Key
Nicholas Levnikevitch
L. R. Marti
Orlo W. Miller
Mary T. Peacock
Grace L. Ryan
Melida Thompson
Curtis Wood

Committee on School Health Records
Ruth H. Weaver, M.D., Chairman, 2601 Parkway, Philadelphia 30, Pa.
William E. Ayling, M.D.
L. M. Corliss, M.D.
Margaret A. Cree
Robert W. Culbert, M.D.
Lorraine E. Means, R.N.
G. G. Wetherill, M.D.

Committee on School Health Service Statistics
Alan Foord, M.D., Chairman, 615 N. Wolfe St., Baltimore 5, Md.
Richard E. Caron, M.D.
Evelyn Flook
George T. Stafford, Ed.D.
Matthew Taback, Sc.D.
Alfred Yankauer, M.D.

Committee on School Nursing
Florence L. Fogle, R.N., Chairman, Ohio State University, Columbus, Ohio
Werner H. Block, M.D.
Clare M. Campbell, R.N.
Helen G. Ennis
Esther M. Finley, R.N.
Mary C. Jones, R.N.
Marjorie Losure
Helen M. Massengale
Hazel M. O'Neal

Committee on Secondary School Health Services
J. Roswell Gallagher, M.D., Chairman, 300 Longwood Ave., Boston 15, Mass.
Eunice Lamona, R.N.
Thomas E. Shaffer, M.D.
Mary E. Spencer, Ph.D.
Regine K. Stix, M.D.
Marie Swanson, R.N.
Ruth G. Taylor, R.N.
Lorna W. Thigpen, Ph.D.
Helen T. Watson, R.N.
Marjorie A. C. Young

Editorial Committee
Mary B. Rappaport, R.N., Chairman, State Education Dept., Albany 1, N. Y.
Arthur L. Harbett
Patricia J. Hill
Louise C. Smith, R.N.

Membership Committee
Warren H. Southworth, Dr.P.H., Chairman, 3510 Cross St., Madison 5, Wis.

Nominations Committee
Elizabeth S. Avery, Ph.D., Chairman, 1201 16th St., N.W., Washington 6, D. C.
Jessie M. Bierman, M.D.
Fred V. Hein, Ph.D.
Dorothy M. LaSalle, Ed.D.

Statistics Section

Committee on Cooperation with Medical Record Librarians
Marta Fraenkel, M.D., Chairman, 125 Worth St., New York 13, N. Y.
Ann Dillon
Vivian B. Holland
Margaret P. Martin, Ph.D.
Mary Ellen Patno
Oswald K. Sagen, Ph.D.
M. Loyola Voelker

Committee on Evaluation
Matthew Taback, Sc.D., Chairman, City Health Dept., Baltimore 3, Md.
Helen C. Chase
Bradley Wells

Advisers:
Health Officers Section
Archibald S. Dean, M.D.
C. Howe Eller, M.D.

Committee on Medical Certification of Causes of Death
Mortimer Spiegelman, Chairman, 1 Madison Ave., New York, N. Y.
E. Cuyler Hammond, Sc.D.
Ancel Keys, Ph.D.
Iwao M. Moriyama, Ph.D.
Elizabeth Parkhurst

Committee on Membership and Directory
Oswald K. Sagen, Ph.D., Chairman, 401 West Jackson Parkway, Springfield, Ill.
Thomas W. Chamberlain
Irving D. Goldberg
Marguerite F. Hall, Ph.D.
Anthony M. Lowell
Paul W. Shipley
Everett H. Williams, Jr.

Committee on Nominations
Elizabeth Parkhurst, Chairman, State Dept. of Health, Albany 1, N. Y.
Antonio Ciocco, D.Sc.
Margaret F. Shackelford
William Haenszel (ex officio)

Committee on Sampling Techniques in Public Health Statistics
Robert E. Patton, Chairman, 217 Lark St., Albany, N. Y.
William G. Cochran
Donald Mainland
Margaret P. Martin, Ph.D.
Felix E. Moore, Jr.
Robert E. Patton
Theodore D. Woolsey

Committee on Medical Care Statistics, Joint
Medical Care Section
Franz Goldmann, M.D., Chairman, 55 Shauttuck St., Boston, Mass.
James P. Dixon, Jr., M.D.
Margaret C. Klem
Charles A. Metzner
Dean W. Roberts, M.D.
C. Rufus Rorem, Ph.D.

Statistics Section
Neva R. Deardorff, Ph.D., Secretary, 7 East 12th St., New York, N. Y.
Isidore Altman, Ph.D.
Antonio Ciocco, D.Sc.
Selwyn D. Collins, Ph.D.
Morton Robins
Louis Weiner

Representatives of the American Public Health Association to Other Organizations and Committees for 1955

Advisory Council on Medical Education
Reginald M. Atwater, M.D.

American Association for the Advancement of Science
Morton L. Levin, M.D.
Franklin H. Top, M.D.

American Association of Medical Record Librarians
Oswald K. Sagen, Ph.D.

American Society for Testing Materials
Committee on Industrial Water, D-19
F. Wellington Gilcreas
Paul W. Kabler, M.D.

Committee on Methods of Atmospheric Sampling and Analysis, D-22
Morris B. Jacobs, Ph.D.

American Society of Civil Engineers
Joint Committee for the Advancement of Sanitary Engineering
George O. Pierce
Clarence I. Sterling, Jr.

American Society of Mechanical Engineers
Air Pollution Control Committee
Arthur C. Stern

American Standards Association
Construction Standards Board
J. Lloyd Barron, C.E.

Sectional Committee on Hazards to Children, Z-66
Frank Tetzlaff, C.E.

Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases, Z-37
Lewis J. Cralley, Ph.D.

Sectional Committee on Bedding and Upholstery—Subcommittee on Sterilization
F. J. Maier

Sectional Committee on Places of Outdoor Assembly
J. Lloyd Barron, C.E.

Sectional Committee on School Lighting
Charles C. Wilson, M.D.
Leonard Greenburg, M.D., Alternate

Sectional Committee on the Safety Code for Exhaust Systems, Z-9
Allen D. Brandt, Sc.D.

Sectional Committee on the Safety Code for Industrial Sanitation in Manufacturing Establishments
Lt. Col. Alvin F. Meyer, Jr., USAF, MSC

Sectional Committee on the Safety Code for the Industrial Use of X-rays, Z-54
Merril Eisenbud

Sectional Committee on Safety in Electric and Gas Welding and Cutting Operations, Z-49
Allen D. Brandt, Sc.D.

Baking Industry Sanitation Standards Committee
Abraham E. Abrahamson

Biological Stain Commission
Edmund K. Kline, Dr.P.H.

Children's Bureau
Committee on Maternal and Child Health and Crippled Children's Services
A. L. Van Horn, M.D. (1952–1955)

Chlorine Institute
Public Health Advisory Committee
Francis B. Elder

Committee for the Improvement of Professional Preparation in Health Education, Physical Education and Recreation
Dorothy B. Nyswander, Ph.D.

Alternates:
Ruth E. Grout, Ph.D.
Charles C. Wilson, M.D.

Council of National Organizations
Ruth E. Grout, Ph.D.

Council on Rheumatic Fever and Congenital Heart Disease
David D. Rutstein, M.D.
George M. Wheatley, M.D.

National Bureau of Standards—Standing Committee on Insect Wire Screening, CS-138-49
Wesley E. Gilbertson

National Conference for Cooperation in Health Education
Charles C. Wilson, M.D.

National Conference on Uniform Accident Statistics
Jules V. Quint

National Health Council
Donald B. Armstrong, M.D.
Harry D. Kruse, M.D.
Ernest L. Stebbins, M.D.

National Research Council
Advisory Panel to the Committee on Food Protection
(Representative to be appointed)
Food and Nutrition Board, Liaison Representative
Alice H. Smith

National Safety Council
Committee on Films for Safety
Arthur Kneerim
Home Safety Conference
Fred P. Long, M.D.

Research Foundation of Chicago
Winston H. Tucker, M.D.

U. S. Department of Commerce
Standing Committee for Bituminous Coated Metal Septic Tanks—(Single Compartment, Residential) Commercial Standard 177–51
Joseph A. Salvato, Jr.

U. S. Department of Health, Education, and Welfare
Joint Committee on Migrants
Robert M. Brown

U. S. Public Health Service
Advisory Committee on Foreign Students and Visitors
Reginald M. Atwater, M.D.

APHA membership application blank on page XXXV

Association News

EIGHTY-THIRD ANNUAL MEETING
AMERICAN PUBLIC HEALTH ASSOCIATION
KANSAS CITY, MO., NOVEMBER 14–18, 1955

FELLOWSHIP IN THE AMERICAN PUBLIC HEALTH ASSOCIATION

The grade of Fellowship was established in the American Public Health Association in 1922. Professional workers in public health are eligible for election as Fellows under certain conditions and as an indication that they have achieved a recognized professional standing. As of January 1, 1955, the total membership of the Association was 12,194, including 2,950 Fellows, or 24 per cent of the total.

Questions are frequently asked regarding the requirements for Fellowship and the following statement outlines the provisions of the current By-laws governing qualification and election.

Persons who have been members of the Association for at least two years and who have reached their 30th birthday are eligible to apply if, in their opinion, they meet the conditions of one or more of the six clauses in the By-laws defining "an established professional standing." These six possible approaches are as follows:

a. A person who has rendered acceptable service for two or more years in a responsible public health position and who has been awarded in course a degree of Doctor of Public Health, Doctor of Science in Public Health, Doctor of Philosophy in Public Health, Doctor of Medicine with at least one year of graduate study in public health in a university, Master of Public Health, Diploma in Public Health, or other equivalent degrees according to standards approved by the Executive Board of the American Public Health Association.

b. A person who has been awarded in course an academic or professional degree involving training in public health and who has been regularly engaged in health work for at least five years, having rendered meritorious service as a health officer or in responsible charge of work in either a public or private health agency.

c. A person who has done notable original work in public health or preventive medicine of a character to give him a recognized standing.

d. A person regularly engaged in health work for at least five years, who has given evidence of special proficiency, who has attained a recognized standing.

e. A teacher of public health or one of its constituent sciences who has attained distinction as an expounder of the principles of public health or its constituent sciences. Such a teacher shall have had at least five years' experience as a teacher of public health subjects. Any years of experience as defined in paragraphs "b" and "d" that the applicant may have had shall be considered the equivalent of the same number of years' experience as a "teacher."

f. A person not covered by the above, who

has made substantial contributions to public health work in his chosen branch, who has attained a recognized professional standing.

Persons wishing to apply should request a Fellowship application blank from the American Public Health Association Membership Department, 1790 Broadway, New York 19, N. Y. Applications are accepted up to August 1 each year for consideration by the Governing Council at the fall meeting. It is important to make clear that members themselves should take the initiative in submitting such applications. This means that, although over 3,000 persons have been duly recognized with this grade of affiliation since 1922, there are other persons well qualified who have never initiated the process of applying for Fellowship. It should be clear that members should not await action by others if they wish to attain Fellowship. It is necessary and proper for them to take the first step.

An application for Fellowship requires sponsorship by two Fellows of the Section with which the applicant desires to be affiliated. These personal signatures are to be obtained by the applicant before submitting the completed application. The APHA office will assist, on request, in determining the Section with which prospective sponsors are affiliated. Applications from persons not wishing to be identified with a particular Section and requesting unaffiliated Fellowship may be sponsored by any two Fellows of the Association.

When properly sponsored and otherwise completed, the application is sent to the APHA office, after which the list of persons applying is published in the American Journal of Public Health, usually in the September issue, but in any case not less than 15 days before the date of the Annual Meeting. An established routine is followed for review by the Section Councils (unaffiliated applications are reviewed by the Executive Board) and by the Committee on Eligibility. This Standing Committee of the Association is made up of one Fellow from each of the 13 Sections, plus a chairman elected by the Executive Board. This group is under instructions from the Governing Council to examine each application in accordance with the provisions of the clause of the By-Laws chosen by the applicant, and to apply the criteria with precision in each case. Final election is by the Governing Council at the second meeting at each annual session.

The privileges of Fellowship include eligibility to serve as an officer of the Association or one of the Sections, chairman of an Association or Section Committee (over one hundred in number), a member of one of the four Standing Committees, a member of the Governing Council or Executive Board, and the right to vote on amendments to the Constitution. Some Civil Service and merit system records depend upon Fellowship in the American Public Health Association as an achievement deserving recognition in applicants.

The dues of Fellows are $15.00 annually, and include a subscription to the American Journal of Public Health and other services to which members are eligible. Life membership is available at $200.00 covering all future annual dues.

Applications for Fellowship to be considered at the 83rd Annual Meeting in Kansas City, Mo., November 14–18, should be filed with the Association as soon as they are completed, and in any case not later than August 1. For further information, address the Membership Department, American Public Health Association.

Presidents of the American Public Health Association

* Stephen Smith, M.D., New York, N. Y. 1872, 1873, 1874
* Joseph M. Toner, M.D., Washington, D. C. 1875
* Edwin M. Snow, M.D., Providence, R. I. 1876
* John Henry Rauch, M.D., Springfield, Ill. 1877
* Elisha Harris, M.D., New York, N. Y. 1878
* James Lawrence Cabell, M.D., Charlottesville, Va. 1879
* John Shaw Billings, M.D., Washington, D. C. 1880
* Charles B. White, M.D., New Orleans, La. 1881
* Robert C. Kedzie, M.D., Lansing, Mich. 1882
* Ezra M. Hunt, M.D., Trenton, N. J. 1883
* Albert L. Gihon, M.D., Washington, D. C. 1884
* James E. Reeves, M.D., Wheeling, W. Va. 1885
* Henry P. Walcott, M.D., Cambridge, Mass. 1886
* George M. Sternberg, M.D., Washington, D. C. 1887
* Charles N. Hewitt, M.D., Red Wing, Minn. 1888
* Hosmer A. Johnson, M.D., Chicago, Ill. 1889
* Henry B. Baker, M.D., Lansing, Mich. 1890
* Frederick Montizambert, M.D., Quebec, Canada 1891
* Felix Formento, M.D., New Orleans, La. 1892
* Samuel H. Durgin, M.D., Boston, Mass. 1893
* E. Persiller-Lachapelle, M.D., Montreal, Canada 1894
* William Bailey, M.D., Louisville, Ky. 1895
* Eduardo Liceaga, M.D., Mexico City, Mexico 1896
* Henry B. Horlbeck, M.D., Charleston, S. C. 1897
* Charles A. Lindsey, M.D., New Haven, Conn. 1898
* Henry Mitchell, M.D., Trenton, N. J. 1899
* Peter H. Bryce, M.D., Toronto, Ont., Canada 1900
* Benjamin Lee, M.D., Philadelphia, Pa. 1901
* Henry D. Holton, M.D., Brattleboro, Vt. 1902
* Walter Wyman, M.D., Washington, D. C. 1903
* Carlos J. Finlay, M.D., Havana, Cuba 1904
* Frank F. Wesbrook, M.D., Minneapolis, Minn. 1905
* Franklin C. Robinson, LL.D., Brunswick, Me. 1906
* Domingo Orvananos, M.D., Mexico City, Mexico 1907
* Richard H. Lewis, M.D., Raleigh, N. C. 1908
* Gardner T. Swarts, M.D., Providence, R. I. 1909
* Charles O. Probst, M.D., Columbus, Ohio 1910
* Robert M. Simpson, M.D., Winnipeg, Manitoba 1911
* J. N. Hurty, M.D., Indianapolis, Ind. 1912
* Rudolph Hering, Sc.D., New York, N. Y. 1913
* W. C. Woodward, M.D., Washington, D. C. 1914
* William T. Sedgwick, Sc.D., Boston, Mass. 1915
John F. Anderson, M.D., Washington, D. C. 1916
* W. A. Evans, M.D., Chicago, Ill. 1917
* Charles J. Hastings, M.D., Toronto, Ontario 1918
* Lee K. Frankel, Ph.D., New York, N. Y. 1919
W. S. Rankin, M.D., Raleigh, N. C. 1920
* Mazÿck P. Ravenel, M.D., Columbia, Mo. 1921
Allan J. McLaughlin, M.D., Washington, D. C. 1922
* E. C. Levy, M.D., Richmond, Va. 1923
* William H. Park, M.D., New York, N. Y. 1924
Henry F. Vaughan, Dr.P.H., Detroit, Mich. 1925
C.-E. A. Winslow, Dr.P.H., New Haven, Conn. 1926
* Charles V. Chapin, M.D., Providence, R. I. 1927
Herman H. Bundesen, M.D., Chicago, Ill. 1928
* George W. Fuller, New York, N. Y. 1929
A. J. Chesley, M.D., St. Paul, Minn. 1930
* Hugh S. Cumming, M.D., Washington, D. C. 1931
Louis I. Dublin, Ph.D., New York, N. Y. 1932
John A Ferrell, M.D., New York, N. Y. 1933
Haven Emerson, M.D., New York, N. Y. 1934
* Eugene L. Bishop, M.D., Nashville, Tenn. 1935
Walter H. Brown, M.D., Palo Alto, Calif. 1936
Thomas Parran, M.D., Albany, N. Y. 1937
* Arthur T. McCormack, M.D., Louisville, Ky. 1938
Abel Wolman, Dr.Eng., Baltimore, Md. 1939
Edward S. Godfrey, Jr., M.D., Albany, N. Y. 1940

* Deceased

* W. S. Leathers, M.D., Nashville, Tenn. 1941
John L. Rice, M.D., New York, N. Y. 1942
* Allen W. Freeman, M.D., Baltimore, Md. 1943
Felix J. Underwood, M.D., Jackson, Miss. 1944
* John J. Sippy, M.D., Stockton, Calif. 1945–1946
Harry S. Mustard, M.D., New York, N. Y. 1947
Martha M. Eliot, M.D., Washington, D. C. 1948
Charles F. Wilinsky, M.D., Boston, Mass. 1949
Lowell J. Reed, Ph.D., Baltimore, Md. 1950
William P. Shepard, M.D., San Francisco, Calif. 1951
Gaylord W. Anderson, M.D., Minneapolis, Minn. 1952
Wilton L. Halverson, M.D., San Francisco, Calif. 1953
Hugh R. Leavell, M.D., Boston, Mass. 1954
Herman E. Hilleboe, M.D., Albany, N. Y. 1955

* Deceased

Recipients of the Sedgwick Memorial Medal

Granted "for distinguished service in public health":

1929 Charles V. Chapin, M.D.*
1930 Theobald Smith, M.D.*
1931 George W. McCoy, M.D.*
1932 William H. Park, M.D.*
1933 Milton J. Rosenau, M.D.*
1934 Professor Edwin O. Jordan *
1935 Haven Emerson, M.D.
1936 Frederick F. Russell, M.D.
1937 No award
1938 Wade H. Frost, M.D.*
1939 Thomas Parran, M.D.
1940 Hans Zinsser, M.D.*
1941 Charles Armstrong, M.D.
1942 C.-E. A. Winslow, Dr.P.H.
1943 Brig. Gen. James S. Simmons, M.C.*
1944 Ernest W. Goodpasture, M.D.
1945 No award
1946 Karl F. Meyer, M.D.
1947 Reginald M. Atwater, M.D.
1948 Abel Wolman, Dr.Eng.
1949 Henry F. Vaughan, Dr.P.H.
1950 Rolla Eugene Dyer, M.D.
1951 Edward S. Godfrey, Jr., M.D.
1952 Kenneth F. Maxcy, M.D.
1953 Carl E. Buck, Dr.P.H.*
1954 Wilson G. Smillie, M.D.

* Deceased

Recipients of the Lasker Awards

The American Public Health Association, through the presentation of the Albert Lasker Awards, acknowledges outstanding contributions to scientific research related to diseases which are the most frequent causes of death and disability, and for distinguished services in the field of public health.

For 1946:
Carl Ferdinand Cori, M.D.
Alexander S. Weiner, M.D., Philip Levine, M.D., and Karl Landsteiner, Ph.D. (posthumously), jointly
John Friend Mahoney, M.D.
Alfred Newton Richards, Ph.D.
Fred L. Soper, M.D.

The following groups were cited:
The Army Epidemiological Board
The Board for the Coordination of Malarial Studies
The Bureau of Entomology and Plant Quarantine
The National Institutes of Health
The Northern Regional Research Laboratory

For 1947:
Oswald T. Avery, M.D.
Thomas Francis, Jr., M.D.
Homer Smith, D.Sc.
Alice Hamilton, M.D.
Thomas Parran, M.D.

The following groups were cited:
The British Ministries of Food and Health
The United States Committee on Joint Causes of Death

For 1948:
Selman A. Waksman, Ph.D., and Rene J. Dubos, M.D., jointly
Vincent du Vigneaud, Ph.D.
Martha M. Eliot, M.D.
R. E. Dyer, M.D.

The following group was cited:
The Department of Medicine and Surgery, Veterans Administration, Paul R. Hawley, M.D., and Paul B. Magnuson, M.D.

For 1949:
Haven Emerson, M.D.
Andre Cournand, M.D.
Marion W. Sheahan, R.N.
Max Theiler, L.R.C.P.
William S. Tillett, M.D., and L. R. Christensen, M.D., jointly
Edward C. Kendall, Ph.D., and Philip S. Hench, M.D., jointly

The following groups were cited:
The American Academy of Pediatrics
The Life Insurance Medical Research Fund

For 1950:
George Wells Beadle, Ph.D.
Eugene L. Bishop, M.D.
George Papanicolaou, M.D.

The following group was cited:
The International Health Division of the Rockefeller Foundation

For 1951:
Karl F. Meyer, M.D.
Florence R. Sabin, M.D.
William Gordon Lennox, M.D., and Frederic Andrews Gibbs, M.D., jointly
Elise L'Esperance, M.D., and Catharine Macfarlane, M.D., jointly

The following groups were cited:
Alcoholics Anonymous
Health Insurance Plan of Greater New York

For 1952:
G. Brock Chisholm, M.D.
Howard A. Rusk, M.D.
F. Macfarlane Burnet, M.D.
Conrad A. Elvehjem, Ph.D.
C.-E. A. Winslow, Dr.P.H.
Frederick S. McKay, D.D.S., and H. Trendley Dean, D.D.S., jointly

For 1953:
Hans A. Krebs, Ph.D.
Michael Heidelberger, Ph.D.
George Wald, Ph.D.
Earle Phelps, C.E.
Felix Underwood, M.D.

The following groups were cited:
Division of Research Grants, National Institutes of Health
University Laboratory of Physical Chemistry Related to Medicine, Harvard University

For 1954:
Leona Baumgartner, M.D.
Edwin B. Astwood, M.D.
John F. Enders, Ph.D.
Alfred Blalock, M.D., Helen B. Taussig, M.D., and Robert E. Gross, M.D., jointly

The following group was cited:
Streptococcal Disease Laboratory, Armed Forces Epidemiological Board, Francis E. Warren Air Force Base, Charles H. Rammelkamp, Jr., M.D.

Scientific Exhibit Citations—Buffalo Annual Meeting

At the 82nd Annual Meeting in Buffalo, N. Y., 53 of the Scientific Exhibits were evaluated by members of the Committee on Scientific Exhibits, S. S. Lifson, chairman. The committee departed from past procedure and used no numerical scoring in judging the exhibits. Each exhibit was evaluated by three observers. The committee was of the opinion that the exhibits were of high quality. Cited for special merit were:

American Veterinary Medical Association
Armed Forces Institute of Pathology
Cattaraugus County Health Department
Division of International Health, U. S. Public Health Service
Erie County Health Department
Institute of Industrial Health, University of Michigan
National Health Council and the Equitable Life Assurance Society of the United States
National Tuberculosis Association
Pan American Sanitary Bureau, World Health Organization
U. S. Air Force Medical Service
U. S. Army Medical Service

ANNUAL MEETINGS

Preliminary Meeting	New York, N. Y., April 18	1872
"	Long Branch, N. J., September 12	1872
Annual Meeting		
1st	Cincinnati, Ohio, May 1–3	1873
2d	New York, N. Y., November 11–14	1873
3d	Philadelphia, Pa.	1874
4th	Baltimore, Md.	1875
5th	Boston, Mass.	1876
6th	Chicago, Ill.	1877
7th	Richmond, Va.	1878
8th	Nashville, Tenn.	1879
9th	New Orleans, La.	1880
10th	Savannah, Ga.	1881
11th	Indianapolis, Ind.	1882
12th	Detroit, Mich.	1883
13th	St. Louis, Mo.	1884
14th	Washington, D. C.	1885
15th	Toronto, Ont., Canada	1886
16th	Memphis, Tenn.	1887
17th	Milwaukee, Wis.	1888
18th	Brooklyn, N. Y.	1889
19th	Charleston, S. C.	1890
20th	Kansas City, Mo.	1891
21st	Mexico City, Mex.	1892
22d	Chicago, Ill.	1893
23d	Montreal, Que., Canada	1894
24th	Denver, Colo.	1895
25th	Buffalo, N. Y.	1896
26th	Philadelphia, Pa.	1897
27th	Ottawa, Ont., Canada	1898
28th	Minneapolis, Minn.	1899
29th	Indianapolis, Ind.	1900
30th	Buffalo, N. Y.	1901
31st	New Orleans, La.	1902
32d	Washington, D. C.	1903
33d	Havana, Cuba	1904
34th	Boston, Mass.	1905
35th	Mexico City, Mex.	1906
36th	Atlantic City, N. J.	1907
37th	Winnipeg, Man., Canada	1908
38th	Richmond, Va.	1909
39th	Milwaukee, Wis.	1910
40th	Havana, Cuba	1911
41st	Washington, D. C.	1912
42d	Colorado Springs, Colo.	1913
43d	Jacksonville, Fla.	1914
44th	Rochester, N. Y.	1915
45th	Cincinnati, Ohio	1916
46th	Washington, D. C.	1917
47th	Chicago, Ill.	1918
48th	New Orleans, La.	1919
49th	San Francisco, Calif.	1920

* Post-Convention Meeting, Mexico City, Mex., 1930.
† Post-Convention Meeting, Havana, Cuba, 1936.
‡ Post-Convention Meeting, Bermuda Cruise, 1949.

ANNUAL MEETINGS (Cont.)

Annual Meeting		
50th	New York, N. Y.	1921
51st	Cleveland, Ohio	1922
52d	Boston, Mass.	1923
53d	Detroit, Mich.	1924
54th	St. Louis, Mo.	1925
55th	Buffalo, N. Y.	1926
56th	Cincinnati, Ohio	1927
57th	Chicago, Ill.	1928
58th	Minneapolis, Minn.	1929
59th	Fort Worth, Tex.*	1930
60th	Montreal, Que., Canada	1931
61st	Washington, D. C.	1932
62d	Indianapolis, Ind.	1933
63d	Pasadena, Calif.	1934
64th	Milwaukee, Wis.	1935
65th	New Orleans, La.†	1936
66th	New York, N. Y.	1937
67th	Kansas City, Mo.	1938
68th	Pittsburgh, Pa.	1939
69th	Detroit, Mich.	1940
70th	Atlantic City, N. J.	1941
71st	St. Louis, Mo.	1942
72d	(Wartime Conference) New York, N. Y.	1943
73d	(Wartime Conference) New York, N. Y.	1944
	No Meeting	1945
74th	Cleveland, Ohio	1946
75th	Atlantic City, N. J.	1947
76th	Boston, Mass.	1948
77th	New York, N. Y.‡	1949
78th	St. Louis, Mo.	1950
79th	San Francisco, Calif.	1951
80th	Cleveland, Ohio	1952
81st	New York, N. Y.	1953
82d	Buffalo, N. Y.	1954

* Post-Convention Meeting, Mexico City, Mex., 1930.
† Post-Convention Meeting, Havana, Cuba, 1936.
‡ Post-Convention Meeting, Bermuda Cruise, 1949.

83rd ANNUAL MEETING

HOW TO MAKE HOTEL RESERVATIONS FOR THE KANSAS CITY ANNUAL MEETING

A HOUSING BUREAU will be operated by the Kansas City Convention Bureau for the 83rd Annual Meeting of the APHA in Kansas City, November 14–18. Since all requests for rooms will be handled in chronological order, you are urged to send in your reservation as quickly as possible on the form below.

Hotel	Hotel and Rates Single	Double	Twin
Hotels immediately adjacent to Auditorium:			
Aladdin	$4.00– 7.00	$6.00–10.00	$ 8.00–10.00
Continental	5.00– 7.00	7.00– 9.00	8.00–12.00
Dixon	4.00– 5.00	6.00– 7.00	8.00– 9.00
Kansas Citian	3.50– 6.00	5.50– 8.50	6.00– 8.00
Muehlebach	6.50–13.00	8.00–13.00	10.00–15.00
New Yorker	5.00–10.00	7.00–12.00	9.00–12.00
Phillips	6.00– 7.50	8.00– 9.50	9.00–11.00
President	5.00– 9.00	8.00–11.00	10.00–13.00
Senator	3.00– 6.00	3.50–10.00	8.00–15.00
State	4.00– 6.00	6.25– 8.25	7.50– 9.00
Hotels within three or four blocks of Auditorium:			
Pickwick	4.50– 7.50	6.00– 9.00	6.50– 9.50
Plaza	2.00– 3.50	2.50– 5.00	
Hotels within short taxi ride from Auditorium (approximately 45¢):			
Alcazar	2.50– 3.50	3.00– 5.00	
Ambassador	4.00– 6.00	5.50– 7.50	5.50– 7.50
Bellerive	5.00– 8.00	7.50–10.50	9.00–10.50
Town House (65¢ cab fare from Auditorium)	5.00– 9.00	7.50–10.00	8.50–14.00

Rates for suites available on request.

HOTEL RESERVATION FORM

MAIL TO: Miss Mary Nugent
Housing, Convention and Visitors Bureau
1030 Baltimore, Kansas City 6, Mo.

PLEASE MAKE RESERVATIONS NOTED BELOW: (Please Print or Type.)

First Choice ..... Hotel Arrival: ....., at ..... a.m. ..... p.m.

Second Choice ..... Hotel Departure ....., at ..... a.m. ..... p.m.

Third Choice ..... Hotel

..... Single room @ $..... ..... Twin Bedroom @ $.....

..... Double Bedroom @ $.....

NAMES OF ALL OCCUPANTS: ADDRESSES:

....

....

....

MAIL CONFIRMATION TO: Signed: .....

Address .....

.....
City Zone State

Confirmation will be mailed within 30 days of receipt of this form by the Division of Housing, Convention Bureau, Kansas City, Mo.

KANSAS CITY TOURIST COURTS, TRAILER CAMPS, AND MOTELS

Good motel rooms are available at prices ranging from $4.00–$7.00 per day for two, $12.00 for four, within easy distance of Kansas City. You will be assigned to good, convenient motel rooms if you will indicate below your interest in such. Motel reservations will be made by the Housing Bureau and confirmed by the motel.

All the following are members of the Kansas City Motel Association:

Ace of the Hi-Way Court	8216–71 Highway
Annette Modern Cabins	81 and 61 Highway
Arrow Court	Highway 24 and 71 Cutoff
B-B Lodge	Highway 40 and Blue Ridge Cutoff
Capital Service Station and Cabins	116 and 71 Highway
Clay Motel	4018 N. Oak
Collins Court	9501 E. New 40 Highway
Crown Motor Court	4340 State-Kansas City, Kans.*
Davidson Courts	115 and 71 Highway
El Cabanas	½ Mile East of City Limits on No. 50
Flicklin Tourist Court	3647 State-Kansas City, Kans.*
Four-Acre Motel	8220 So. 71 Highway
Hi-Way Motel	71 Highway and Bannister
Gables Motel	6831 State-Kansas City, Kans.*
Holiday Inn Hotel	US 40 and 71 By Pass (5 miles East of Kansas City, Mo., and 3 miles South of Independence, Mo.)
Johnson Motel Tourist Courts	107 St. and 71 Highway
Kozy Kourt	36 Terrace and New 40 Highway
Leeds Motel Courts	3707 Raytown Road
Putthoff's Modern Cottages	40 Highway and Blue Ridge
Rainbow Auto Court	5912 E. 50 Highway
Royal Auto Court	7831–69 Highway
Skyline Court	3531 N. Oak, N. Kansas City
Sky-Vu Motel	New 40 Highway and Marsh, N. Kansas City
U. Smile Station No. 1	Old 40 Highway and Raytown Road
U. Smile Motel	50 Highway at 58th Street
U. Smile Court	40 Highway and Skiles
Waight's Tourist Camp	79 and 50 Highway
West Haven Motor Court	5250 State-Kansas City, Kans.*
Wornall Motel Tourist Court	8215 Wornall
Young's Motel	5024 Merriam Drive, Kansas City, Kans.*

* Kansas City, Kans., is one mile from Kansas City, Mo.

MOTEL RESERVATION FORM

MAIL TO: Miss Mary Nugent
Housing, Convention and Visitors Bureau
1030 Baltimore, Kansas City 6, Mo.

Please assign Motel accommodations for ..... persons arriving on November ....., and leaving on November .....

NAMES OF ALL OCCUPANTS: ADDRESSES:

....

....

....

....

MAIL CONFIRMATION TO: Signed: .....

Address .....

..... City Zone State

Employment Service

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association Office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

This is a service of the Association conducted without expense to the employer or employee.

POSITIONS AVAILABLE

Public Health Physicians—Health officers for one urban, one county, and three multiple-county health departments in Illinois. $10,000, dependent on training, experience, and performance record.

State Position as Assistant Chief—Division of Local Health Services, up to $860 per month; successful local experience and Board certification or eligibility, therefore, desired. Excellent opportunity for experience in growing local health service program. Roland R. Cross, M.D., Director, Illinois Dept. of Public Health, Capitol Bldg., Springfield, Ill.

Director of Local Health Services—$10,600. Requires physician with M.P.H. and certification in preventive medicine by the American Board of Preventive Medicine. Dalton Roberts, Personnel Officer, Colorado State Dept. of Public Health, Room 420, State Office Bldg., Denver 2, Colo.

Director of Preventive Medical Services—$713, $749, or $787, depending on qualifications. M.D. and at least one year of graduate study in public health, pediatrics, or obstetrics, and at least five years of experience, including two years' experience in public health, pediatrics, or obstetrics. Must have State of Nevada license at time of appointment. Headquarters in Reno. Nevada State Personnel Dept., Carson City, Nev.

District Health Director—Philadelphia Department of Public Health. New, consolidated health center covering large district. Includes dental, well child, TB, and VD clinics and public health nursing. Four years of public health experience and training, including two years in organized public health training, an M.D. and M.P.H. required. $9,770–$12,270. Closing date for applications, April 30.

Director of Preventive Medicine—Philadelphia Department of Public Health. Responsible for the development and administration of a comprehensive program in preventive medicine, including the control of communicable and chronic diseases, and direction of child and maternal health services, dental health programs, public health laboratories, and other medical public health programs. Extensive and progressively responsible experience and training in public health, including five years in an administrative capacity, an M.D., and M.P.H. required. $12,270–$15,412.

James P. Dixon, M.D., Health Commissioner, Room 503, City Hall Annex, Philadelphia 3, Pa.

Director of Visiting Nurse Association of Albany, N. Y.—Twenty budgeted positions on staff plus two supervisors. Requires seven years public health nursing experience, two of which have been in supervisory capacity, and B.S. with major in public health. Mrs. H. Sewall Pruyn, Ross Court, Loudonville, Albany County, N. Y.

Dental Hygienist—Graduate of approved school to direct dental hygiene program in a health department housed in new modern building. $4,000 plus 8 cents per mile travel in own automobile. J. H. White, M.D., Director, Weld County Health Department, Box 521, Greeley, Colo.

Executive Secretary—Los Angeles County Tuberculosis and Health Association, covering population of 4,500,000. College graduate and successful executive experience required, latter preferably with a tuberculosis association. Salary depends on ability and experience. Selection Committee, Los Angeles County Tuberculosis and Health Association, 1670 Beverly Boulevard, Los Angeles 26, Calif.

Dentist—for rural children's preventive dental program in Southern Saskatchewan. Involves some travel. Allowance for private car or government car supplied. Epuipment and assistant provided. Salary to be negotiated. Children's Preventive Dental Program, Health Region No. 2, Assiniboia, Saskatchewan, Canada.

Public Health Sanitarians—$379. Wayne County Civil Service Commission, 2200 Cadillac Tower, Detroit 26, Mich.

Chemist, Grade 8—$259–$346—Requirements: college graduate with major in chemistry. No experience required.

Chemist, Grade 11—$326–$435. Requirements: college graduate with major in chemis-

try; three years' experience; must have grade C Surface Water Supply Operator's license. Civil Service Dept., City of Dallas, Room 412 City Hall, Dallas, Tex.

Laboratory Director—to do both clinical and public health laboratory procedures. Must be eligible for California license as both clinical technician and public health bacteriologist. Salary open. Rural county 95 miles south of San Francisco near coastal and mountain areas. Roswell L. Hull, M.D., Director, San Benito County Health Dept., Health Center, Hollister, Calif.

Medical Social Work Adviser—$3,692–$4,316. Open to female resident citizens of the United States.

Medical Technologist I—$3,120–$3,588. Resident citizens of the United States.

Public Health Nurse—$3,432–$3,848. Open to female resident citizens of the United States.

Personnel Director, Municipal Bldg., Hartford, Conn.

Public Health Staff Nurses—for generalized program with special emphasis on maternal and child health.

Health Educator—female or male, in district serving 50,000 people. Program general, but emphasis on maternal and child health.

Social security, salaries dependent on qualifications. Must have own car.

Donald A. Cowan, M.D., Director, Chippewa-Luce-Mackinac District Health Dept., Sault Ste. Marie, Mich.

Health Education Consultants—with California Bureau of Health Education. Must have two years' recent experience in public health education programs, and master's degree from school of public health accredited by the APHA. Graduate study must have had emphasis on health education. $458–$556. State Personnel Board, 1015 L St., Sacramento 14, Calif.

Chief, Sewage and Water Pollution Control Section—Division of Sanitary Engineering, State Department of Health. Engineer or chemist with experience in sewerage works or water pollution control activities. Merit system appointment; state car furnished. $5,340–$6,180. Experienced person may start above minimum. Charles E. Carl, Director, Division of Sanitary Engineering, State Dept. of Health, Pierre, S. D.

Public Health Nurses—generalized program in county health department, headquarters 17 miles west of downtown Detroit near University of Michigan and Wayne University. $351–$381. Director of Nurses, Wayne County Health Dept., 10 Henry Ruff Road, Eloise, Mich.

Public Health Nurse Supervisor—$325–$390. Four years public health agency experience at least one of which shall have been in a supervisory capacity; graduation from an accredited school of nursing; and possession of a certificate of public health training and eligibility to practice nursing in Virginia required. Harold Hudgins, Secretary, Civil Service Commission, Room 310 City Hall Bldg., Norfolk, Va.

Director of Public Health Nursing—County of 47,000, in Sierra foothills; two staff nurses. $3,900–$4,740. Experienced person may start above the minimum. California registration as R.N. and P.H.N. required. Ruth M. Moldenhauer, M.D., Director of Public Health, Placer County Health Dept., Auburn, Calif.

Director of Public Health Nursing—Requirements: R.N. license and a public health nursing certificate for the State of California. B.S., completion of university program in public health nursing; three years of public health nursing experience, two years of which shall have been generalized in an organized health department. Preparation in administration and supervision. $371–$464. Starting salary for fully qualified director $415. Car furnished.

Public Health Nursing Staff Positions—Official agency, northern California, rural. Applicant should be eligible for registration and have a public health nursing certificate in California and have completed a university program in public health nursing. Two years' experience desired. $332 per month.

John A. Carswell, M.D., Humboldt-Del Norte County Health Dept., Box 857, Eureka, Calif.

Supervising Public Health Nurse—with degree and two years' experience for county health department. Four public health nurses on staff. $4,200. F. L. Quillman, M.D., Director, Montgomery County Health Dept., Hillsboro, Ill.

Staff Nurses—Combination agency offering health teaching, prevention, and control of disease, maternal and child health and care of the sick. PHN service. City of 300,000, staff of 42 with good supervision. Omaha has many cultural, recreational, and educational opportunities. Helen E. Hestad, Executive Director, VNA (Division PHN, Omaha-Douglas County Health Dept.), 1201 S. 42 St., Omaha 5, Neb.

International Health Vacancies

School of Public Health—Faculty of Medicine, American University of Beirut, Lebanon.

Public Health Engineer—B.S. in engineering (preferably civil) and M.P.H.; male. Should have two or more years as public

health engineer in official or voluntary health agency and two years of teaching experience. Extensive health department experience or teaching experience. Duties: To teach graduate courses in public health engineering; assist with courses for sanitarians; and supervise summer field work.

Biostatistician—Ph.D. in statistics, preferably with practical and teaching experience in biological or health statistical work. Might consider person with M.A. in statistics if he has had good experience. Duties: To supervise courses in statistics and summer field placements and teach a course in medical statistics for medical students.

Maternal and Child Health Expert—M.D. who is Board certified or qualified for Board certification in either obstetrics or pediatrics. Experience in maternal and child hygiene program either in teaching or in a health agency required. Pediatrician preferred. Duties: To teach a course in MCH for public health students and courses in growth and development in the medical school; and to direct the Well-Baby Clinic program, including teaching some clinical pediatrics and performing research.

All contracts would be for two years with 11 months work each year. Near East College Association, 40 Worth St., New York 13, N. Y.

POSITION WANTED

Sanitarian—B.A. degree in bacteriology, minors in chemistry and biological science. Male. Married, 29 years old. One and a half years with Michigan Department of Health, five months in Water and Milk Section. Owns car. Desires job in sanitation—county or city department. W. S. Payne, 623 S. Washington, Mt. Pleasant, Mich.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Palmolive Building, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) Director, state health department; West. (b) Public health physician to direct preventive health division, city health department; East; salary, $12,000–$15,000. (c) Public health physicians, nurses, health educators, sanitarians; foreign assignments. (d) Nursing direct and two staff nurses; county health department; California. (e) Public health instructor; department of nursing, liberal arts college; East. (f) Public health nursing supervisor; Alaska. (g) School nurse; direct program; suburban town; 10-month year; Midwest. (h) Public health nurse to head program, 350-bed hospital, affiliated 26-man clinic; East. (i) Public health nursing director; duties: developing public health nursing activities, various sections of state; resort city, Southwest; $5,300–$6,400. (j) Health educator; county health department, East. (k) Public health bacteriologist; California. (l) Medical analyst; state department; East. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago, Ill.

OPPORTUNITIES WANTED

(a) Public health physician; M.P.H. Johns Hopkins; five years, director, city health department; three years, professor, preventive medicine. (b) Public health nursing administrator; B.S. (nursing), M.A. (counseling, guidance); year's graduate training public health nursing, midwestern university; experience includes serving as director, public health nursing, state college and as consultant, city health department; considerable teaching. (c) Health educator; B.S. (health education), M.A. (public health); six years, health educator, state health department. (d) Public health statistician; P.H.B., Chicago; seven years, director, statistics, state health department. (e) Sanitarian; B.S.; graduate training, environmental sanitation; five years, sanitarian, county health department. (f) Director of bacteriology; M.S. (bacteriology), M.P.H., Michigan; eight years, director, bacteriology, metropolitan health department. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago, Ill.

News From The Field

Hoover Report on Medical Services

The Commission on Organization of the Executive Branch of the Government, headed by former President Herbert Hoover, has reported that there is substantial disorganization, "lack of coordination," and waste in the federal health services. On the basis of the report of its Task Force of medical experts, the commission makes a series of 29 recommendations that it is believed will eliminate waste and duplication and save a considerable portion of the four billion dollars spent on these services annually.

The commission has modified the report of the Task Force in several major as well as minor aspects by changes, additions, and deletions. The final report and recommendations transmitted to Congress by the commission are briefly described below.

Scope of Services—The federal government provides complete medical care for four million persons and partial medical care for an additional 26 million. The former are chiefly military personnel on active duty and the latter former military personnel and other federal employees and their dependents. The costs for these services are estimated to be $4,149,000,000 annually, about one-half of which represents disability allowances.

Recommendations

Federal Advisory Council of Health—No single point exists where federal medical policies and activities can be reviewed in order to further coordination, eliminate duplication, and develop over-all policies. The development of a Federal Advisory Council within the Executive Branch is recommended. This council would be responsible for such activities and would also include cooperative planning among agencies providing psychiatric care.

Public Health Service—The Public Health Service is commended on its "152 years of magnificent tradition and devoted service and leadership in world public health science." It is, however, recommended that all of its general hospitals (12) and clinics be closed, except those related to research (for example, the Clinical Center at the National Institutes of Health) and the clinics needed for the physical examination of federal civilian employees and of foreign nationals entering the United States. The Freedmans Hospital, the hospitals for drug addiction, tuberculosis, leprosy, and the medical facilities for Indians are to be continued. The whole question of earmarked federal grants to the states for health purposes is to be reconsidered by the secretary of the Department of Health, Education, and Welfare in relation to the inflexibility of the present system.

It is recommended that the provision of hospital and clinic services to American merchant seamen through the marine hospitals of the Public Health Service be ended.

Preventive Health Services—The proposed Federal Advisory Council of Health should make recommendations to improve preventive health services, including those rendered in connection with medical care of federal beneficiaries, in the interests of both health conservation and long-range economy.

The health research programs of the federal government should be reviewed by the Federal Advisory Council of Health and the project grants for research pertaining to health should be changed from those confined to a specific year to more general grants in accordance with an over-all plan for health

research submitted by each medical school, institution, or agency that receives such grants.

Health Insurance—It is suggested that the Executive Branch develop a program of voluntary medical and hospital insurance through a pool of private health insurance agencies for all civilian employees of the federal government. This should be done on a prepayment basis, using payroll deductions and including payment of a portion of the costs by the government. The federal government is also urged to develop a voluntary plan of medical and hospital insurance for military dependents and for dependents of the Public Health Service, the Coast Guard, and the Coast and Geodetic Survey on a similar basis, but without mention of government financial contributions.

Veterans Administration—The number of veterans' hospitals should be reduced by closing all surplus and canceling all new building plans for additional general hospitals. It is also recommended that patients with nonservice-connected disabilities receive hospital care only if their signed statements regarding inability to pay can be verified. If unable to pay at the time of hospitalization, the patient should be obligated to pay within the reasonably near future if it becomes possible then. Outpatient care that may prevent inpatient care and medical and rehabilitation services for the aging veteran are encouraged. The tightening of the disability compensation program is sought by transferring the authority and responsibility to establish and maintain medical criteria for disability, from the Compensation and Pension Branch of the Veterans Administration to the Department of Medicine and Surgery in the same administration. It is also recommended that a mechanism for the regular, periodic review of disability allowances be developed to determine the advisability for increasing or decreasing them.

Armed Services—Much closer coordination of the medical and hospital services of the Army, Navy, and Air Force is recommended. In addition, revisions of the Selective Service Act and improved training for medical and dental personnel on active and inactive service is called for.

National Library of Medicine—The Armed Forces Medical Library is called the most important medical library in the world. It is, however, said to be housed inadequately and too poorly supported to be effective. It is recommended that legislation be enacted to establish a National Library of Medicine as a Division of the Smithsonian Institute.

The Inter-American Housing Center

The Pan American Union has had since 1952 an Inter-American Housing Center in Bogota, Colombia, under the Program of Technical Cooperation of the Organization of American States and sponsored by the Inter-American Economic and Social Council. The Pan American Union is the general secretariat for the OAS made up of the 21 member countries which recognized the growing importance of the housing problem in the Western Hemisphere.

The objectives of the center include: specialized training of experts in housing, research and investigation, consultant and advisory services to housing agencies, and a scientific exchange and publication service. Under this program a complete fellowship, including travel, is provided for one student per country for a 10-month graduate course in housing. In the research field the center concentrates on the use of locally produced building materials in the construction of low-cost housing.

The center publishes technical monographs on various aspects of housing and offers research contracts to technological and scientific institutions in the Latin American countries, with particular ref-

erence to health and sanitation. The Pan American Sanitary Bureau provides the services of a sanitary engineer for specialized instruction in environmental sanitation.

The Colombian government has made available a building especially designed for the use of the Housing Center, and the Colombian national housing agency and the National University are collaborating in the work of the center. Among recent publications is the 1953 Annual Report of the center, which gives a comprehensive description of the center's activities, illustrated by many photographs. The Housing Center operates under the direction and supervision of the Division of Housing and Planning of the Pan American Union whose headquarters are located in Washington, D. C. Its director is Leonard J. Currie, former assistant professor at Harvard University. Anatole A. Solow, chief of the Division of Housing and Planning of the Pan American Union, prepared the Annual Report.

New Officers for AAOM

At the seventh annual meeting of the American Academy of Occupational Medicine in Philadelphia, February 10 and 11, the following officers were elected:

President—Frank Princi, M.D.
Vice-President—E. E. Evans, M.D.
Secretary—Leonard J. Goldwater, M.D.
Treasurer—Irving R. Tabershaw, M.D.
Representative to the American Board of Preventive Medicine—Robert A. Kehoe, M.D.

North Carolina Health News

In January, 1955, the North Carolina Health Council began publication of North Carolina Health News. Included in the first issue is a detailed analysis of state budget requests for the various health activities, including hospitals of the state. Of a total budget of nearly $63,000,000 over $6,000,000 is for the State Board of Health, and more than $1,000,000 for child health programs in schools.

Also included in this first four-page issue are short news items about various voluntary health and citizen organizations in the state. E. G. McGavran, M.D., dean of the North Carolina School of Public Health, is president of the Council; C. Scott Venable, executive secretary of the North Carolina Tuberculosis Association, its secretary. The State Board of Health is represented on the Editorial Committee by William P. Richardson, M.D., head of the Field Training Department of the School of Public Health and of the State Health Department. Box 2102, Raleigh, N. C.

Hiscock Speaks in England

At the annual Health Congress of the Royal Sanitary Institute being held in Bournemouth, England, April 26–29, Ira V. Hiscock, Sc.D., president-elect of the American Public Health Association, speaks before a Conference of Sanitary Inspectors. The title of his address is "Public Health Surveys of Sanitation and Health Services." He is also one of the honored guests at an informal dinner to overseas representatives on April 26.

Medical Advisory Committee

The Social Security Administration has appointed a 15-man Medical Advisory Committee to advise on medical aspects of administering the new "disability freeze" provision in the Social Security law. By this provision a worker retains his old-age and survivors insurance rights intact during an extended period of total disability. The chairman of the Medical Advisory Committee is J. Duffy Hancock, M.D., professor of clinical surgery, University of Louisville School of Medicine. Among other members are Herman E. Hilleboe, M.D., New York State health commissioner and

president of the American Public Health Association; Pearl Bierman, medical social work consultant, American Public Welfare Association; Donald A. Covalt, M.D., Department of Physical Medicine and Rehabilitation, New York University College of Medicine; J. S. Felton, M.D., Department of Preventive Medicine, University of Oklahoma; and Leo Price, M.D., director, ILGWU Health Center, New York City. Each is a member or Fellow of the American Public Health Association.

Milk and Food Sanitarian's Award

The International Association of Milk and Food Sanitarians invites nominations for the 1955 Sanitarians Award. The award is made to a person, employed as a professional milk sanitarian by a county or municipality, who has during the past five years "made a meritorious contribution in the field of milk and food sanitation to the public health and welfare of a county or municipality in the United States or Canada." Employees of state or federal agencies, or of industry, are not eligible. Nominations must be made by members of the International Association of Milk and Food Sanitarians.

The award consists of a Certificate of Citation and $1,000 in cash. It is sponsored jointly by the Diversey Corporation, Klenzade Products, Oakite Products, Pennsylvania Salt Manufacturing Company, and the Mathieson Chemical Corporation. The 1954 presentation will be made at the 42nd annual meeting of the International Association of Milk and Food Sanitarians in Augusta, Ga., in October.

May 15 is the deadline for submitting nominations. Further information from the chairman of the Committee on Recognition and Awards, John D. Faulkner, Chief, Milk and Food Program, Division of Sanitary Engineering Services, U. S. Public Health Service, Washington 25, D. C., to whom nominations with supporting data should be sent.

Disaster Research Ideas Encouraged

The Committee on Disaster Studies of the National Academy of Sciences-National Research Council, at a recent meeting emphasized the need to encourage research by competent representatives of the social sciences and related disciplines who wish to advance knowledge in their own fields and contribute to the solution of disaster problems.

The committee is interested in the effects of disaster upon individuals, groups, communities, and societies; human response to the threat and impact of disaster, ranging from the individual to the national level; the human aspects of such problems as communications, warning organization, rescue, welfare, medical care, evacuation, and logistics; and the long-term effects and recovery problems of disaster.

The committee can support this development to a limited extent by providing financial assistance for investigations and analyses. Assistance, similar to grants-in-aid, will normally range from $200 to $2,000. Especially meritorious projects pertinent to the committee's interests and requiring larger sums can be considered. Proposals from graduate students, faculty members, and other qualified investigators will be entertained.

Inquiries should be directed to the Committee on Disaster Studies, Division of Anthropology and Psychology, National Academy of Science-National Research Council, 2101 Constitution Avenue, Washington, D. C.

Saving Hogs Saves Human Beings, Too

Because of an epizootic of vesicular exanthema which was threatening the hog-raising industry, according to "California's Health" of the State Health De-

partment, Californians will be in less danger of trichinosis. The cooking of raw garbage has long been advocated by the Health Department as a public health measure. But it was only when the vesicular exanthema, which does not attack human beings, became widespread that drastic control measures were taken. The entire state was put under state and federal quarantine until feeding of raw garbage was discontinued. By the end of 1954, 29 counties were entirely free of quarantine and all other areas were released from general quarantine but 150 individual premises where raw garbage had been fed within 30 days were still under quarantine.

National Plumbing Code

The "American Standard National Plumbing Code," prepared under the sponsorship of the American Society of Mechanical Engineers and the American Public Health Association, is now available. It replaces the "American Standard Plumbing Code," published in 1949 as ASA A40.7.

M. Warren Cowles, A. F. Dappert, William H. Cary, Jr., C.E., and Ralph E. Fuhrman were the Association's representatives on the committee that prepared the code.

American Society of Mechanical Engineers, 29 W. 39th St., New York 18, N. Y.; $3.50.

Rehabilitation Advisory Council

Among a 12-member National Advisory Council on Vocational Rehabilitation appointed to advise the director of the U. S. Office of Vocational Rehabilitation are the following:

Henry H. Kessler, M.D., director, Kessler Institute for Rehabilitation, West Orange, N. J.

Theodore G. Klumpp, M.D., president, Winthrop-Stearns, Inc., New York, N. Y.

Eugene J. Taylor, assistant professor of clinical medicine and rehabilitation, New York University College of Medicine.

Exchanging Social Medicine News

An informal International Corresponding Club in Preventive and Social Medicine has been established, inspired chiefly by the many specialists in this field who have visited centers abroad in the postwar years. Medical men and women engaged in teaching or research in preventive and social medicine are eligible for membership whether or not they have traveled abroad.

The club has two main purposes:

a. To keep members in touch informally with activities in centers of preventive and social medicine in various countries.

b. To help insure a friendly and hospitable welcome for visitors.

The club plans a semiannual bulletin for which correspondents for various centers are being selected. The first issue, that of January, 1955, includes correspondence from 26 centers in 11 countries. England is represented by 11, the United States by five, Scotland by two, and Brazil, Canada, Eire, Holland, India, Northern Ireland, Norway and Yugoslavia each by one. It is the hope that correspondents will be found for many more centers in many parts of the world.

Correspondence and requests for further information should be addressed to Dr. Harold Willard, Department of Preventive Medicine and Public Health, Cornell University Medical School, 1300 York Avenue, New York 21, N. Y., or Dr. John Pemberton, Department of Social and Industrial Medicine, The University of Sheffield, England (after September, 1955).

A Kentucky First

Mason County (Ky.) with a population nearing 20,000, is the first county of the state to take advantage of a new law authorizing taxes for public health purposes. The 1954 Kentucky General Assembly enacted a law providing for

county tax districts authorized to levy taxes for health purposes. By its provisions, upon a joint resolution of the county board of health and the county's fiscal court, the question is submitted to the voters as to whether a county tax district for public health purposes should be created. The resolution sets the maximum rate at which the tax, if voted, can be levied.

Two counties had a referendum vote in November, 1954. Mason County voted to create a taxing district with power to levy taxes up to eight cents on every $100 of assessed valuation. With 3,400 votes cast, the measure passed by a 24-vote margin. It is estimated that the eight cent tax will produce approximately $21,800, about what the county is currently spending from local, state, and federal sources.

The second county voting defeated the proposal by a narrow margin. It is reported that the favorable vote in Mason County can be attributed to an intensive promotional campaign and the support of the medical society, the ministerial association, PTA groups, Lions, Jaycees, newspapers, radios, and senatorial candidates of both political parties. The state and county health department staffs are evaluating the campaign for guidance to other counties that want to provide "adequate continuing financial support for the local health department."

Shasta County Health Department

Shasta is the 46th of California's 58 counties to provide organized full-time public health services for its citizens. The county has been approved by the State Department of Public Health for receipt of state assistance funds in accordance with 1947 legislation designed to assist the development of local public health services and set standards for their administration.

Shasta County has a population of about 30,000 but an additional estimated 250,000 annually come to the county for recreation. Vonnie Dunston, M.D., is the county health officer and county physician.

The 12 remaining counties without organized full-time health services have a combined population of less than 160,000.

WHO News

Meeting of Executive Board

WHO's Executive Board held its 15th session in Geneva for 18 days ending February 4. Its chairman was Henry van Zile Hyde, M.D., chief of the Division of International Health of the Public Health Service. Among its decisions taken were:

To recommend to the Eighth World Health Assembly, a 1956 budget of $9,611,600 was adopted, which represents but a slight increase over the 1955 budget. In this connection, the board decided to call the attention of the World Health Assembly "to the disparity between the resources which have so far been available to the organization and the increasingly expressed needs of governments for assistance in strengthening their health services." Additional requests from governments for assistance amounting to $2,640,000 could not be included in the director-general's proposed program because of budget restrictions.

A detailed resolution concerning atomic energy was adopted giving priority to health protection against radiation. Among the hazards specified are radiation-induced diseases which need further study, radioactive wastes, potential danger to populations from nuclear reactor accidents, problems of uranium mining, transport of radioactive material and radioisotopes. The resolution also calls for the development of standards for radioactive materials and units of radioactivity essential to the ac-

curate measurement of irradiation dangers to man.

The Executive Board admitted five more international associations to official relationship with WHO bringing the total of such nongovernmental agencies to 35. Those newly accepted are the International Union of Health Education of the Public, the International Hydatidological Association, the International Society of Criminology, the International Society for Blood Transfusion, and the International Organization Against Trachoma.

Decisions on other matters are:

1. A dental health officer will be appointed to guide WHO's international dental program of research, prevention, and education.
2. WHO and FAO will call a joint conference on food additives in view of the potential health danger from the increasing number of chemicals added to food stuffs.
3. A special study will be carried out on the integration of preventive and curative medicine with special reference to the role of hospitals.

The board also considered 12 Expert Committee reports, as well as the reports of the six regional offices, and a review of the operations of the Tuberculosis Research Office in Copenhagen and a report on poliomyelitis research. The board also made further preparations for the Eighth World Health Assembly to be held in Mexico City beginning on May 10.

UNICEF's "Assignment Children"

"Assignment Children," new 20-minute technicolor feature picturing the activities of the United Nations Children's Fund (UNICEF) in Asia, had its world premiere at United Nations headquarters on February 15. The film, designed to acquaint millions with the work of the Children's Fund, was released in the United States, Canada, Australia, and New Zealand in mid-March and is now being shown in practically every country of the world.

"Assignment Children," grew out of Danny Kaye's recent tour of Asia as UNICEF ambassador-at-large. Co-starred are the children of six Asian countries who bring to the screen a poignant commentary on their needs and on UNICEF-aided efforts to meet them. The film was produced by Paramount Pictures which is making the distribution all over the world on a nonprofit basis as a contribution to UNICEF.

In illustrating the scope and variety of UNICEF activities now under way in 88 countries, "Assignment Children" fulfills the mission with which the comedian was charged by Secretary-General Hammarskjold upon his departure for Asia—"to make known the needs of children." From Japan, where Danny Kaye visits a handicapped children's hospital, to Thailand, where he meets Boon-Ting, a youngster cured of the crippling tropical disease of yaws, the film shows how milk, medicines, vaccines, and other UNICEF supplies are furthering widespread gains in child health. It also reflects the self-help nature of these efforts, and their solid foundation in real international cooperation.

Exchanging Medical Publications

Medical libraries throughout the world may offer their surplus publications to other medical institutions for free distribution and exchange through the World Health Organization in Geneva. Heretofore, this activity has been carried on through the United Nations Educational, Scientific, and Cultural Organization. Through its Library and Reference Section, WHO is already in touch with many medical libraries throughout the world. It invites offers of exchanges, accompanied by lists of the most needed books and periodicals.

WHO, acting as a central information service for medical libraries wishing to exchange and distribute material, will inform medical libraries in its member states of the availability of medical books

and periodicals offered by libraries. All shipments will be made directly from one medical library to another after agreement on the items required and on shipping costs.

PERSONALS

IRVIN ALLEN,† former assistant industrial hygienist, U. S. Naval Gun Factory, Washington, D. C., is now industrial hygienist, U. S. Naval Shipyard, Charleston, S. C.

EDWIN B. ASTWOOD, M.D., senior physician, New England Center Hospital, Boston, Mass., and recipient of a 1954 APHA Lasker Award for medical research, was included in the 1955 Honor Roll of Medicine of Modern Medicine "for his creative investigations in endocrinology, particularly of the thyroid, and his application of modern tools for diagnosis and treatment."

NANCY BAYLEY, former research associate and lecturer in psychology, University of California, has been named chief, Section on Developmental Psychology, National Institute of Mental Health, Bethesda, Md.

ISAAC L. BEAUCHAMP has recently become industrial health engineer, San Diego (Calif.) Department of Public Health.

MATHILDE BERRETTINI, occupational therapist, California State Department of Health, has resigned to accept a Fulbright Commission Grant to work in a new cerebral palsy unit in Rome.

WALTER L. BIERRING, M.D.,* chairman, American Board of Preventive Medicine, and former Iowa state commissioner of health, has been elected an Honorary Fellow of the Royal Sanitary Institute, London.

LOUIS BLOCK, DR.P.H.,* program coordinator, Division of Medical and Hospital Resources, Public Health Service, has resigned to join the staff of ANTHONY J. J. ROURKE, M.D.,* hospital consultant, New Rochelle, N. Y.

S. K. BORKAR, Drugs Control Section, Central Health Ministry, New Delhi, India, was a recent visitor at the APHA office on a study tour of the United States.

CATHERINE BOUGHMAN, R.N., former staff member, Philadelphia Board of Education, has been named senior public health nurse, Bucks County (Pa.) Department of Health.

ANTON J. CARLSON, M.D.,† professor emeritus, University of Chicago, was unanimously elected honorary president for life, National Society for Medical Research at the society's annual meeting in Chicago, February 6.

G. ROBERT COATNEY, PH.D., chief, Chemotherapy Section, Laboratory of Tropical Diseases, National Institutes of Health, Bethesda, Md., Public Health Service, has been awarded the 1954 Gorgas medal by the Association of Military Surgeons for his contributions to the chemotherapy of malaria. The award, established by Wyeth Laboratories of Philadelphia, consists of a silver medallion, a parchment scroll, and $500.

BEVERLY CARROLL, occupational therapist, California State Health Department, has resigned to accept an overseas appointment with Special Services in France or Germany.

JAMES H. CRAWFORD, assistant chief, Training Branch, Communicable Disease Center, Public Health Service, Atlanta, Ga., has been transferred to Washington, D. C., to serve with the Division of Sanitary Engineering Services.

FREDERICK EBERSON, M.D.,* former lecturer in preventive medicine, University of Tennessee Medical School, is now regional health officer for Henderson, Webster and Union Counties, Ky.

HAVEN EMERSON, M.D.,* was an honored guest at a dinner of the New York Academy of Medicine on February 3 and was presented with a plaque at the Annual Hermann M. Biggs Memorial Lecture on "The Medical Aspects of Alcoholism and Drug Addiction."

PIEDAD ESQUIVEL, former public health nurse, Alameda County (Calif.) Health Department, is now itinerant public health nurse, Alaska Department of Health with headquarters at Nulato.

BLANCHE FINDLAY, recently completed work for a master of science degree in public health, is now public health nurse, Juneau Health Center, Alaska Department of Health.

THOMAS B. FITZPATRICK,* former assistant director, Montefiore Hospital, Pittsburgh, Pa., has been appointed administrator of the Citizens General Hospital, New Kensington.

R. H. FRIEDRICH, D.D.S., chairman, Council on Federal Dental Services, American Dental Association, has been appointed secretary, Council on Dental Health, Chicago, Ill., succeeding W. PHILIP PHAIR, D.D.S.,* resigned to return to private practice.

ABRAHAM W. FUCHS,* engineer officer of the Public Health Service Commissioned Corps, who has been chief of the Health and Sanitation Division of the Foreign Operations Administration Mission to Israel for the past three years, is now temporarily on duty in Washington, D. C., as acting chief of the Far East Branch, pending another foreign assignment.

* Fellow.
† Member.

DAVID L. GRIFFITH has been promoted from health education consultant to director, Bureau of Public Health Education, West Virginia Department of Health, Charleston.

CATHERINE HARRIS,† chief serologist, Oklahoma State Department of Health Laboratory, Oklahoma City, has received the 1954 Outstanding Service Award of the Oklahoma Society of American Medical Technologists.

JOHN M. HENDERSON,* with the Communicable Disease Center, Public Health Service, Savannah, Ga., was elected to honorary fellowship in the National Society of India for Malaria and Other Mosquito-Borne Diseases, in November, 1954.

ROBERT D. HENNIGAN, senior sanitary engineer, Syracuse District, State Health Department, has been assigned to the New York Water Pollution Control Section, Bureau of Environmental Sanitation.

HENRY A. IMUS, Ph.D., former head, Physiological Psychology Branch, the Office of Naval Research, has been named assistant to the director, National Institute of Neurological Diseases and Blindness, Bethesda, Md.

ADRIAN CHARLES KANAAR, M.B., former consultant, Workman's Compensation Board, Ontario, Canada, has been appointed director of physical medicine, Division of Physical Restoration, Saskatchewan Department of Public Health.

PAUL D. KATES, Public Health Service officer, formerly assigned to the North Carolina State Health Department for epidemiological and research investigations in the venereal disease program, has been assigned to the venereal disease control program, West Virginia Department of Health, Charleston.

FREDERICK S. KENT,* formerly chief, Home Accident Prevention Activities, has been assigned as chief, Interstate Carrier Section, General Engineering Program, Division of Sanitary Engineering Services, Public Health Service, Washington, D.C.

FLORENCE KOPSTEIN, R.N., formerly in the Bureau of Maternal and Child Health, New Jersey State Department of Health, is now a public health nurse, Bucks County (Pa.) Health Department.

CHRISTINE LING, former teacher and dental hygienist, Honolulu Department of Public Instruction, has been appointed health education consultant, Oregon State Board of Health, Portland.

GEORGE M. LIVINGSTON, former sanitarian, Wilkes-Barre Department of Health, has been appointed regional sanitarian, Pennsylvania State Health Department administrative area No. 1 embracing eight counties with headquarters in Wilkes-Barre.

MARK LUKENS, who formerly had his own laboratory, is now toxicologist, Connecticut State Health Department, Hartford.

SAMUEL D. MACREADY,* former general sanitary inspector for the United Fruit Company in Latin America, has been appointed field sanitarian, the Public Health Committee of the Paper Cup and Container Institute, New York City.

D. KEITH MACDONALD,† director of health education, Victoria-Esquimalt Health Department of Victoria, B.C., Canada, has returned following two assignments as a health education specialist with the WHO in Sarawak and Formosa.

COLONEL PAUL H. MARTIN, USA, MC (Ret.), has been named health commissioner of Elkhart County, Goshen, Ind.

RAYMOND D. MAURER, sanitarian for 16 years, Pennsylvania State Department of Health, has been transferred to the Bucks County Health Department.

JOHN G. MCCORMICK,† former health educator, Cattaraugus (N.Y.) County Health Department, now holds the same position in the Brookline (Mass.) Health Department.

WILLIAM S. MIDDLETON, M.D., has succeeded VICE-ADMIRAL JOEL T. BOONE, (MC), USN, Rtd., as chief medical director, Veterans Administration, Washington, D.C. Admiral Boone's four-year statutory appointment terminated Feb. 28, 1955, and he refused reappointment for reasons of health.

CHARLES H. MILLER, JR., M.D.,† has been appointed health officer for Comanche, Jackson, and Tillman Counties, Okla., with headquarters in Lawton.

MAJOR A. S. O'HARA, C.D.,* regional consultant in sanitation, Department of Health of Ontario, Canada, has been admitted as a fellow of the Royal Sanitary Institute.

MELVINA F. PALMER, R.N., M.S.P.H., former director of public health nursing, Minnesota Department of Public Health, is now director of public health nursing, Bucks County (Pa.) Department of Public Health.

GEORGE N. PAPANICOLAOU, M.D., professor of Clinical anatomy, Cornell University College of Medicine, Ithaca, N.Y., and 1950 APHA Lasker Award winner, received the fifth annual Bertner Foundation Award for his research contributions in developing the Papanicolaou Smear Technique and gave the Bertner Lecture at the ninth annual symposium for fundamental cancer research at the University of Texas M.D. Anderson Hospital and Tumor Institute on March 11.

OLIVE PETERSON, who recently completed work for a B.S. degree in nursing and public

* Fellow.
† Member.

health nursing training at the University of Washington, is now public health nurse, Alaska Department of Health.

MARION J. PICINICH, M.D., has been appointed director of the Lincoln Parish Health Unit, La., with the expectation that he will later be a district officer for serveral surrounding parishes.

EDWARD R. PINCKNEY, M.D.,† former medical officer, Panama Canal Service, is now director of public health, Napa County, Napa, Calif.

BELLE DALE POOLE, M.D., child health consultant, California State Department of Public Health, Los Angeles office, has returned after a year as professor of maternal and child health, Department of Preventive Medicine and Public Health, American University, Beirut, Lebanon.

EVA MILLER REESE, R.N.,† former director, United Community Defense Services Project, National League for Nursing, is now director, Public Health Nursing Association, Des Moines, Iowa.

T. LEFOY RICHMAN, former director of public information, Division of Special Health Services, Public Health Service, is now assistant executive director, American Social Hygiene Association, succeeding ELEANOR SHENEHON, retired.

JOSEPH A. SALVATO, JR., M.C.E.,* formerly chief, Bureau of General Sanitation, Erie County Health Department, is now director, Division of Environmental Hygiene, Rensselaer County Health Department, N. Y.

CRAYTON WALKER,† former administrative assistant to the chief, Division of Maternal and Child Health, and supervisor of the Hearing and Vision Conservation Program, Ohio Department of Health, has been appointed executive director of the American Hearing Society, Washington, D. C., succeeding W. EARL PROSSER, resigned to accept a position with the United Health and Welfare Fund of Michigan.

WILLIAM HUGH WEIR, former director, Water Pollution Control, Georgia Department of Health, and now a WHO short-term consultant in public health engineering, is conducting a three-month environmental sanitation survey in Taiwan for the WHO Regional Office for the Western Pacific.

ALBERTA WILSON, R.N.,* assistant chief, has succeeded the late ANN S. NYQUIST as chief, Section of Public Health Nursing, Minnesota Department of Health, Minneapolis.

JOHN C. WILSON, former assistant director of public health statistics, South Dakota Health Department, is now public health statistician, Montana State Board of Health, Helena.

WALTER A. WOOD, formerly on the staff of the New York State Department of Taxation and Finance, is now administrative assistant, Bucks County (Pa.) Department of Public Health.

* Fellow.
† Member.

DEATHS

FREDERICK A. BLESSE, M.D.,† health officer, Henrico County Health Department, Richmond, Va. (and not MINNIE H. BLEASE † of the South Carolina State Board of Health, as erroneously listed in the March Journal) (Health Officers Section).

MELVILLE D. DICKINSON, JR., M.D., M.P.H.,† chief Tuberculosis Control Branch, Department of the Army, consultant to the Japanese government in matters of tuberculosis and maternal infancy and child health, in Japan on December 20, 1954 (Health Officers Section).

WINIFRED HATHAWAY, educator and leader in efforts to insure adequate educational opportunities for America's partially seeing children, December 1, 1954.

EDWARD C. LAVALLEY, M.C.E.,† director of environmental sanitation, Tompkins County (N.Y.) Health Department, on January 8, 1955 (Engineering Section).

ELTON J. BRADDOCK,† formerly general sanitarian, Division of Sanitation, Seattle-King County Health Department (Wash.) who retired in May, 1952 (Engineering Section).

HENRY P. DENGLER, M.D.,† health officer, Summit, N. J. (Health Officers Section).

W. K. FENTON, M.D.,† medical officer of health, Township of Etobicoke, Toronto, Canada, on February 23 (Health Officers Section).

CONFERENCES AND DATES

American Public Health Association 83rd Annual Meeting. Kansas City, Mo., November 14–18.

State and Regional Public Health Meetings:

Arizona Public Health Association. Westward Ho Hotel, Phoenix, Ariz. April 19–22.

Georgia Public Health Association. De Soto Hotel, Savannah, Ga. April 25–27.

Idaho Public Health Association. Shore Lodge Hotel, McCall, Idaho. May 7–8.

Illinois Public Health Association with the Middle States Public Health Association. Morrison Hotel, Chicago, Ill. April 20–22.
Iowa Public Health Association. Saver, Hotel, Des Moines, Iowa. April 7–8.
Louisiana Public Health Association. Jung Hotel, New Orleans. May 9–12.
Massachusetts Public Health Association. Science Museum and Massachusetts General Hospital, Boston, Mass. April 28.
Michigan Public Health Association. Grand Rapids, Mich. May 18–20.
Missouri Public Health Association. Sheraton Hotel, St. Louis, Mo. May 12–14.
Montana Public Health Association. Missoula, Mont. June 3–4.
New Mexico Public Health Association. Clovis Hotel, Clovis, N. M. April 25–27.
South Carolina Public Health Association. Clemson House, Clemson, S. C. May 19–21.
Southern Branch, APHA. New Orleans, La. Jung Hotel. May 9–12.
United States-Mexico Border Public Health Association. Hotel del Bosque, Mexico City, May 6–9.
Utah Public Health Association. Hotel Ben Lomond. Ogden, Utah. April 25–26.
Western Branch, APHA. Westward Ho Hotel, Phoenix, Ariz. April 19–22.

Meetings of Other Organizations Coming in April, May, and June:

American Association of Medical Social Workers. San Francisco, Calif. May 31.
American Diabetes Association. Atlantic City, N. J. June 13–15.
American Geriatrics Society. Hotel Roosevelt, New York, N. Y. April 21–22.
American Hearing Society. Hotel Morrison, Chicago, Ill. June 12–14.
American Home Economics Association. Minneapolis, Minn. June 28–July 1.
American Medical Association. Atlantic City, N. J. June 6–10.
American National Red Cross. Atlantic City, N. J. June 13–15.
American Institute of Nutrition. San Francisco, Calif. April 10–15.
American Physical Therapy Association. Hotel Jefferson, St. Louis, Mo. June 20–24.
American Psychiatric Association. Atlantic City, N. J. May 9–13.
American Water Works Association. Chicago, Ill. June 12–17.
British Medical Association. London, England. June 1–4.
Canadian and British Medical Associations, Joint Meeting. Toronto, Canada. June 20–22.
Conference on Biological Waste Treatment. Manhattan College, New York, N. Y. April 13–15.
Eastern States Health Education Conference. New York Academy of Medicine, New York, N. Y. April 21–22.
Health Congress of the Royal Sanitary Institute. Bournemouth, England. April 26–29.
Industrial Health Conference. Memorial Auditorium, Buffalo, N. Y. April 23–29.
American Conference of Governmental Industrial Hygienists. April 24–26.
American Association of Industrial Nurses, Inc. April 25–29.
Industrial Medical Association. April 25–28.
American Association of Industrial Dentists. April 26–28.
American Industrial Hygiene Association. April 25–28.
Mental Health Week. May 1–7.
National Air Pollution Symposium. Pasadena, Calif. April 18–19.
National Association for the Prevention of Tuberculosis. Fourth Commonwealth Health and Tuberculosis Conference. June 21–25. Royal Festival Hall, London.
National Conference of Social Work. San Francisco, Calif. May 29–June 3.
National League for Nursing. Biennial Convention. St. Louis, Mo. May 2–6.
National Tuberculosis Association. Milwaukee, Wis. May 23–27.
Planned Parenthood Federation of America. Waldorf-Astoria Hotel, New York, N. Y. May 5–6.
Purdue Industrial Waste Conference. Purdue Memorial Union. Lafayette, Ind. May 9–11.
Society of American Bacteriologists. New York, N. Y. May 8–13.
U. S. Conference of Mayors. Waldorf Astoria, New York, N. Y. May 19–21.
World Health Assembly (8th). World Health Organization. Mexico City. May 10.

A NEW CONCEPT OF CANCER
by Mitchel D. Auerbach
Fearless, farthright inquiry into the cause of cancer . . . why present research methods have failed . . . how you can help conquer this dread disease. $1.50
PAGEANT PRESS, Inc., 130 W. 42nd St. N.Y.

CARE OF LABORATORY ANIMALS

This is that long-needed simple but reliable outline of adequate measures for the routine care of the animals used in public health laboratories. Prepared by the Association's Subcommittee on Diagnostic Procedures and Reagents, it carries the stamp of approval and authority of that committee. Says A. H. Harris, M.D., Chairman of the Subcommittee:

> "New York State law requires approval of all laboratories using living animals. In administering the law, we in the State Health Department Laboratory are frequently asked for detailed advice regarding recommended specifications. The manual on the 'Care of Laboratory Animals,' backed by the weight of authority, clearly and succinctly provides advice to the person in charge and to the animal man. The suggestions are explicit with virtually no discussion. The manual is not intended to provide exclusive, standard methods for animal care, but rather to present a level of performance below which a laboratory ought not to fall."

Each of the following is considered:

Mice	Cats
Rats	Dogs
Guinea Pigs	Monkeys
Rabbits	Sheep and Goats
Hamsters	Domestic Fowl
Cotton Rats	Frogs
Ferrets	

These are general sections on:

Control of laboratory pests and parasites.
Food Selection and storage.
Control of some laboratory animal diseases.

Published in December, 1954.

1–19 copies — 75¢ each
20–99 copies — 65¢ each
100 and over — 50¢ each

Book Service

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
1790 Broadway at 58th Street
New York 19, N. Y.

SUDS OR FOAM IN DETERGENT SOLUTIONS

The appearance of suds or foam on a detergent solution which is not mechanically agitated or recirculated is a reliable index of the incorporation of wetting agent in the compound.

Although foam itself does not contribute to cleaning action, under certain conditions controlled foam provides advantages; in other circumstances it is objectionable. In mechanical washer solution tanks having overflow pipes or weirs, a limited blanket of foam is advantageous. Buoyant soil and extraneous matter are entrapped in the foam, kept out of the circulating solution, and are eventually carried into the overflow. This action reduces the accumulation of sludge in washer solution tanks. On the contrary, foam in one or more of the soak compartments of a bottle-washer is detrimental, since it dries on bottles in their passage from one compartment to the next; and, if not completely removed by the rinse, results in filming or streaks. Foam clings to surfaces after brushing, or when the wash solution level in a tank drops during drainage; if not promptly rinsed away, it dries there. Excessive foam is extremely undesirable in solutions circulated through piping in position, because, when trapped in the upper portion of the circuit it insulates surfaces from the cleaning solution; and, when trapped in the circulating pump it reduces the volume of solution circulated.

Foaming in Diversey detergents is controlled by their composition and Diversey representatives are carefully trained to observe foam conditions and to prescribe products whose foaming characteristics must match the operation. For information write:

THE DIVERSEY CORPORATION
1820 ROSCOE STREET
CHICAGO 13, ILLINOIS

The American Public Health Association acknowledges with deep appreciation its indebtedness to these Sustaining Members whose annual dues help support its general program

Sustaining Members

American Aerovap, Inc., New York, N. Y.
American Association of Medical Social Workers, Washington, D. C.
American Bottlers of Carbonated Beverages, Washington, D. C.
American Can Company, New York, N. Y.
Association for the Aid of Crippled Children, New York, N. Y.
George Baehr, M.D., New York, N. Y.
Borden Company, New York, N. Y.
Chlorine Institute, Inc., New York, N. Y.
Congress of Industrial Organizations, Washington, D. C.
Difco Laboratories, Detroit, Mich.
Diversey Corporation, Chicago, Ill.
Equitable Life Assurance Society of the United States, New York, N. Y.
Grand Concourse Medical Group, New York, N. Y.
John Hancock Mutual Life Insurance Company, Boston, Mass.
Hellige, Inc., Garden City, N. Y.
Hoffmann-La Roche, Inc., Nutley, N. J.
Holland-Rantos Company, Inc., New York, N. Y.
International Association of Ice Cream Manufacturers, Washington, D. C.
International Association of Machinists, Washington, D. C.
International Equipment Company, Boston, Mass.
Lederle Laboratories Division, American Cyanamid Co., New York, N. Y.
Liberty Mutual Insurance Companies, Boston, Mass.
Licensed Beverage Industries, Inc., New York, N. Y.
Life Insurance Company of Virginia, Richmond, Va.
Lily-Tulip Cup Corporation, New York, N. Y.
Merck & Company, Inc., Rahway, N. J.
M & R Laboratories, Columbus, Ohio
Metropolitan Life Insurance Company, New York, N. Y.
Montefiore Hospital Medical Group, New York, N. Y.
National Dairy Products Corporation, New York, N. Y.
National Farmers Union, Denver, Colo.
New York Hotel Trades Council and Hotel Association Health Center, Inc., New York, N. Y.
Oval Wood Dish Corp., Tupper Lake, N. Y.
Owens-Illinois Glass Company, Toledo, Ohio
Prudential Insurance Company of America, Newark, N. J.
Rip Van Winkle Clinic, Hudson, N. Y.
Ross-Loos Medical Group, Los Angeles, Calif.
St. Louis Labor Health Institute, St. Louis, Mo.
Sealright Company, Inc., Fulton, N. Y.
Sharp and Dohme, Inc., Glenolden, Pa.
Sidney Hillman Health Center, New York, N. Y.
E. R. Squibb and Sons, New York, N. Y.
Steiner Sales Company, Chicago, Ill.
Sun Life Insurance Company, Baltimore, Md.
Textile Workers Union of America, New York, N. Y.
Theatre, and Amusement Building Janitors' Union, Chicago Office, Chicago, Ill.
Travelers Insurance Company, Hartford, Conn.
UAW-CIO (United Automobile, Aircraft and Agricultural Implement Workers of America), Detroit, Mich.
Union Central Life Insurance Company, Cincinnati, Ohio
Upjohn Company, Kalamazoo, Mich.
Velsicol Corporation, Chicago, Ill.
Winthrop-Stearns, Inc., New York, N. Y.
Wyeth Laboratories, Inc., Philadelphia, Pa.

APPLICATION FOR MEMBERSHIP

NAME..... Birth Date .....
(please print)

MAILING ADDRESS.....
(street) (city or town) (state)

EDUCATION (give schools, dates and degrees; if no degrees received, say "none")

.....

PROFESSIONAL SOCIETIES
OF WHICH A MEMBER.....

EXPERIENCE (show recent positions, giving titles, names of organizations and years of tenure)

.....

.....

PRESENT OCCUPATION.....
(title of position)

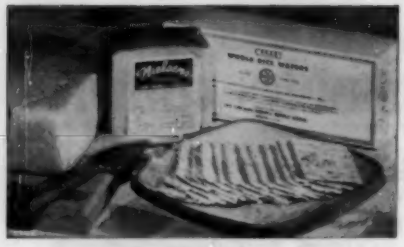
.....
(name of organization) (part or full time) (date employed)

Remarks to describe character of work if not indicated by title.....

.....

AMERICAN PUBLIC HEALTH ASSOCIATION, Inc.
1790 Broadway at 58th Street New York 19, N. Y.

Please complete application on reverse side



Tasty Variety for

LOW SALT DIETS

LOW SODIUM CHEESE—A tangy cheese with sodium content less than milk—only 9.5 mg. in 100 grams cheese. ½ lb. and 1 lb. loaves.

CELLU WHITE WHEAT BREAD — Flavorsome canned bread with sodium content only 4 mg. in 100 grams of bread. 10 oz. can.

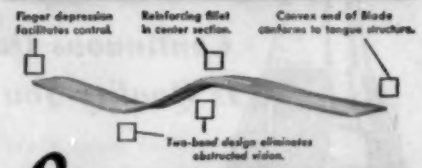
CELLU RICE WAFERS—Tasty with soups and salads. Sodium content only 18 mg. in 100 grams. 4 oz. pkgs.

Many other tasty foods—Send for Catalog

CELLU SPECIAL PURPOSE *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE Inc.
1750 West Van Buren Street Chicago 12, Illinois

this MODERN tongue blade.....


Finger depression facilitates control.
Reinforcing fillet in center section.
Convex end of Blade conforms to tongue structure.
Two-bend design eliminates obstructed vision.

Saves your time...Gives better visibility...Facilitates treatment...Pleases the patient...

Ask your supply house
Write for Sample today

Made only by
OVAL WOOD DISH CORPORATION
Tupper Lake, N. Y.
GRAY BAR BUILDING NEW YORK CITY
509 WABASH AVE CHICAGO 11

OWD Riteshape TONGUE BLADE

(Continued from previous page)

SECTION IN WHICH MEMBERSHIP IS DESIRED (choose only one)

☐ Health Officers	☐ Engineering	☐ Maternal and Child Health	☐ Epidemiology
☐ Laboratory	☐ Industrial Hygiene	☐ Public Health Education	☐ School Health
☐ Statistics	☐ Food and Nutrition	☐ Public Health Nursing	☐ Dental Health
		☐ Medical Care	☐ Unaffiliated

SPONSORS

Signature..... Address.....

Signature..... Address.....

NOTE: Sponsors must be two members and/or Fellows of the American Public Health Association. It is essential that your application be sponsored, but if you cannot obtain the signatures of two persons affiliated with the Association, write their names and addresses in the spaces above and we will get in touch with them for you.

DUES A remittance for $..... is enclosed. Dues will be paid by .....

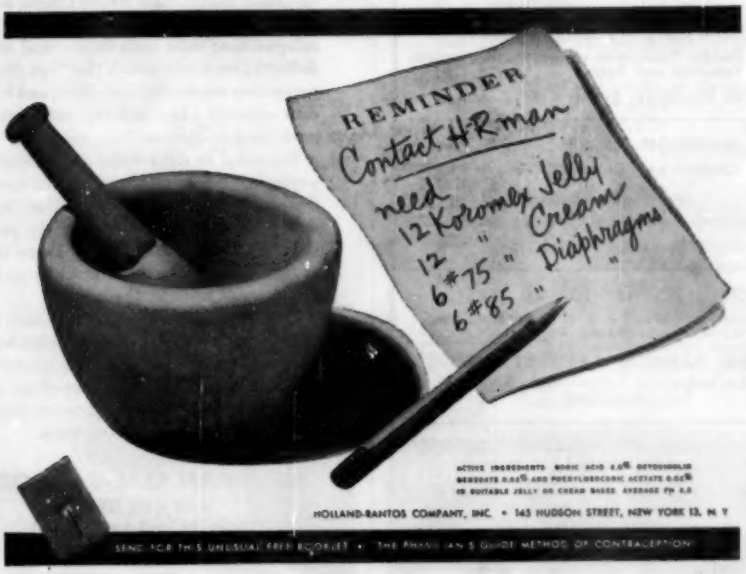
..... and a bill should be sent to that address. Annual membership dues are $10.00 ($10.50 Canada; $11.00 foreign countries exclusive of Latin America) and include a subscription to the American Journal of Public Health as well as the other services maintained by the Association. The membership year is the same as the calendar year. Members joining during the first six months of the year will receive the Journal from January onward. Members joining after July 1st are requested to pay $15.00 (Canada $15.75, foreign $16.50) covering the latter half of the current year and the whole of the ensuing year, the Journal beginning with July of the current year.

DATE..... SIGNATURE.....

A.P.H.A. AFFILIATED SOCIETIES AND BRANCHES

Society and Secretary

Arizona Public Health Association, Marilynn F. Risdon, P. O. Box 7007, Phoenix
Colorado Public Health Association, Arguyle Seikel, 901 E. 17th Ave., Denver
Connecticut Public Health Association, Irma Biehusen, 1044 Chapel St., New Haven
Cuban Public Health Society, Dr. Raphael Calvo Fonseca, San Rafael 1170, Havana
Florida Public Health Association, Fred B. Ragland, P. O. Box 210, Jacksonville
Georgia Public Health Association, Mrs. Mayola S. Center, Rm. 332, State Office Bldg., Atlanta
Idaho Public Health Association, Mrs. D. W. McDougal, P. O. Box 640, Boise
Illinois Public Health Association, Lillian Nash, 737 So. Wolcott, Chicago
Iowa Public Health Association, K. E. Hartoft, State Dept. of Health, Des Moines
Kansas Public Health Association, Evelyn Ford, State Board of Health, State Capitol, Topeka
Louisiana Public Health Association, Lloyd Methe, P. O. Box 576, Lafayette
Massachusetts Public Health Association, Helen P. Cleary, 695 Huntington Ave., Boston
Michigan Public Health Association, La Rue Miller, 3429 Old Dewitt Road, Lansing
Minnesota Public Health Conference, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
Missouri Public Health Association, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
New Mexico Public Health Association, Mary M. Gilliland, Box 711, Santa Fe
New York State Public Health Association, Elmer Anderson, Erie Co. Health Dept., Buffalo
North Carolina Public Health Association, Doris Tillery, State Board of Health, Raleigh
North Dakota Public Health Association, Lois S. Williamson, State Dept. of Health, Bismarck
Northern California Public Health Association, Marian E. Leach, Univ. of California, School of Public Health, Berkeley
Ohio Public Health Association, Maxine F. Pendleton, Madison Co. Health Dept., London
Oklahoma Public Health Association, Marjorie Butler, 3400 North Eastern, Oklahoma City
Pennsylvania Public Health Association, Robert H. Conn, 303 N. Second St., Harrisburg
Public Health Association of New York City, Abe Brown, Health Dept., 125 Worth St.
Puerto Rico Public Health Association, Lagrima Marin, Apartado 211, San Juan
South Carolina Public Health Association, Carrie B. Du Priest, State Board of Health, Columbia
South Dakota Public Health Association, T. A. Evans, State Dept. of Health, Pierre
Southern California Public Health Association, Gerald A. Heidbreder, M.D., 241 No. Figueroa St., Los Angeles
Tennessee Public Health Association, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
Texas Public Health Association, H. E. Drumwright, City Health Dept., Dallas
Utah Public Health Association, Mrs. Mildred Engar, Salt Lake City Board of Health, 115 So. State, Salt Lake City
Washington State Public Health Association, John E. Van Amburgh, Seattle-King Co. Health Dept., Seattle
West Virginia Public Health Association, Paul B. Shanks, State Dept. of Public Health, Charleston
Southern Branch, A.P.H.A., Frank M. Hall, M.D., Box 491, Gainesville, Fla.
Western Branch, A.P.H.A., Mrs. L. Amy Darter, State Dept. of Health, 2180 Milvia St., Berkeley, Calif.



Another Lederle "First"!

MUMPS VACCINE

A practical immunizing antigen for prevention of mumps in children or adults where indicated. Immunizes for about one year.
Packages: 2 cc. vial (1 immunization),
10 cc. vial (5 immunizations).

LEDERLE LABORATORIES DIVISION
AMERICAN Cyanamid COMPANY
PEARL RIVER, NEW YORK

Lederle

Directory of Health Service

BLACK & VEATCH
Consulting Engineers
Water — Sewage — Electricity — Industry
Reports, Designs, Supervision of Construction, Investigations, Valuation and Rates.
4706 Broadway, Kansas City 2, Mo.

EMERSON VENABLE, P. E.
Chemist and Chemical Engineer
Atmospheric Pollution.
Industrial Hygiene Chemical Warfare
6111 Fifth Ave., Pittsburgh 32, Pa.

PROTEIN-BOUND IODINE TESTS
Advanced and Routine Services to Hospitals, Industries and Health Departments.
THE SAMSON LABORATORIES
1619 Spruce Street Philadelphia 3, Pa.
estab. 1924

PROFESSIONAL EXAMINATION SERVICE
A Personnel Administration Service in the Field of Public Health
Available to State and Local Health Departments and Merit Systems
Examinations Field Consultation
American Public Health Association, Inc.
1790 Broadway, New York 19, N. Y.

● Most bottle caps protect milk sufficiently from dairy to doorstep. But for safeguarding milk both before and after delivery, none can match the "last drop" protection assured by Seal-Hood and Seal-Kap closures (disc and cap in one compact, easy-to-open unit).

No metal to fight with...no annoying prying or special tool is needed to open a Seal-Kap or Seal-Hood closure. Both open easily...yet snap back on tightly every time the milk is used. This means sure sanitary protection—right down to the last drop of milk in the bottle.

Both Seal-Kap and Seal-Hood have the double-safe qualities of a cap-plus-hood — *without* its cost or operation trouble. These one-piece closures bring dairymen *single-operation* economy.

AMERICAN SEAL-KAP CORP.
11-05 44th DRIVE
LONG ISLAND CITY 1, N. Y.

IN TINEA CAPITIS

Use Council Accepted

OINTMENT SALUNDEK®

(NEW)

Brand of ZINCHLORUNDESAL

1954 ACCEPTED COUNCIL ON PHARMACY AND CHEMISTRY AMERICAN MEDICAL ASSOCIATION 1955

Now, a strikingly improved formulation incorporating both *mono* and exceptionally antimycotic *di-chloro* salicylanilides, is available in Ointment Salundek (New). This, it is believed, in conjunction with skilled medical management and the patient's cooperation, will *shorten treatment time of Tinea Capitis and simultaneously increase the rate of cure.*

References:

Hopkins, J. G., et al; J. Invest. Dermat., 7, 239-253.
Sullivan, M., and Bereston, E. S.; J. Invest. Dermat., 19, 175-178.
Marsh, W. C.; U. S. Armed F. Med. J.; 1, 1105-7.

Available at all prescription pharmacies.

Tubes of 1 oz. Jars of 1 lb.

Write for literature and a liberal trial supply.

Maltbie

MALTBIE LABORATORIES DIVISION

WALLACE & TIERNAN INC.

25 MAIN ST., BELLEVILLE 9, NEW JERSEY, U.S.A.

PSA-10

Why Over 3,500 TB Case-Finding Projects Annually Use

POWERS X-RAY SERVICE

- **POWERS SERVICE IS COMPLETE!** Powers relieves project sponsors of *all* technical problems. Our experienced technicians work to the sponsor's schedule, with units able to take as many as 200 chest x-rays an hour. We deliver fully processed x-rays, with a viewer, to sponsor's roentgenologist.
- **LOWER IN COST!** The large volume of x-rays Powers handles nationally enables us to cut overhead costs to a minimum for each individual project.
- **EFFICIENT!** Our 20 years of experience in chest x-ray surveys from Maine to Texas have taught us to do the job quickly and effectively under many diverse conditions.
- **FLEXIBLE!** According to the sponsor's requirements, Powers offers either the full-size roll paper method or the 70 mm photofluorographic method—and operates either portable units or mobile units with generators.

Reg. T.M. POWERS X-RAY PRODUCTS

Our technical advisory service is available without obligation. Write before you plan a TB Case-Finding Project!

POWERS X-RAY PRODUCTS, INC.

Group Radiography

GLEN COVE LONG ISLAND N. Y.

from **A** amputation

to zoacanthosis*

*As a preoperative skin disinfectant.

it's dependable

antisepsis

with quick acting economical

Zephiran® CHLORIDE

high germicidal potency • low toxicity • nonirritating

WINTHROP Winthrop-Stearns INC. New York 18, N.Y. • Windsor, Ont.

Zephiran, brand of benzalkonium chloride (refined)

VD...

ONE-INJECTION CONTROL

In both acute gonorrhea and early syphilis, Injection BICILLIN has been found to provide effective one-visit therapy. Smith[1] reports that the injection of 2,400,000 units supplies the prolonged penicillin levels needed for eradicating primary and early secondary syphilis. And, "In acute gonorrheal urethritis, a single dose of 300,000 units intramuscularly is adequate to effect a cure in most cases."[2]

1. Smith, C. A., and others: Am. J. Syph., Gonor. & Ven. Dis. 38:136 (March) 1954. 2. Council on Pharmacy and Chemistry: New and Nonofficial Remedies. J. B. Lippincott Co., Philadelphia, 1954, p. 148.

SUPPLIED: Injection BICILLIN—2,400,000 units, single-dose disposable syringe (4-cc. size). Also Available: 300,000 units per cc., multiple-dose vial of 10 cc.

INJECTION BICILLIN® LONG-ACTING
Benzathine Penicillin G (Dibenzylethylenediamine Dipenicillin G)

Wyeth®
Philadelphia 2, Pa.

Penicillin with a Surety Factor

A BARGAIN for BABIES!

White's COD LIVER OIL CONCENTRATE DROPS

A penny a day keeps rickets away

Also available: chewable, candy-like tablets and high potency capsules.

WHITE LABORATORIES, INC., KENILWORTH, N. J.

mirror, mirror, on the wall...

Overweight can be a physical, social, and economic handicap . . . an unnecessary handicap which can be eliminated by intelligent choice of food and moderate exercise.

Medically supervised research on weight reduction shows active, overweight adults losing 1½ to 2 pounds per week on a diet of appetizing meals featuring a variety of foods which provide all nutrient needs except calories—and which also satisfy hunger. Persons on such diets maintained pep and sense of well-being, reported no hunger pangs . . . but shed excess pounds!

These diets contain approximately equal weights of protein, fat and carbohydrate. Fat combined with protein in a meal delays hunger for it reduces stomach motility and gastric juice secretion, promotes slower digestion, and makes possible a more gradual absorption of nutrients.

The foods included in these diets provide all essential nutrients in amounts recommended for adults. Only calories are in deficit. Dairy foods are an important feature of these meals because of their high proportion of nutrients in relation to the calories they provide. Their taste appeal and variety make the diet easy to follow until the desired weight is lost.

Doctors! Send for the convenient leaflet and diet instruction sheets containing menus for three full meals a day for an entire week. Diets at two moderately low calorie levels are included. These diet instructions will be useful even where a person may require a different calorie level for weight loss. For such individuals, the physician can suggest desired modification, retaining the basic diet plan.

These materials are yours on request—without cost or obligation. Simply fill out the coupon below and mail it today.

NATIONAL DAIRY COUNCIL—*A non-profit organization* C-3
Since 1915 . . . promoting better health through nutrition research and education.
111 N. Canal Street, Chicago 6, Illinois.
Please send me, without cost or obligation, a pad of diet instruction sheets and leaflet on weight reduction.

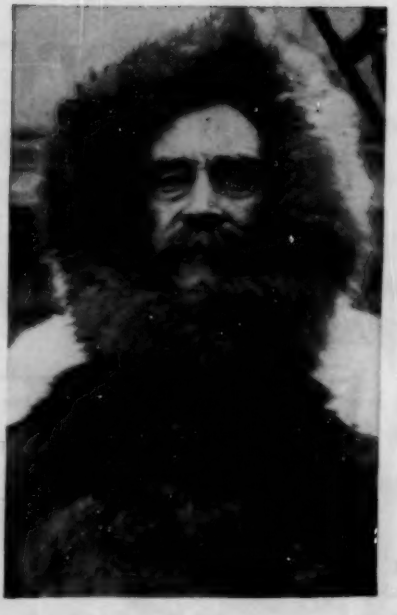
NAME_____

PROFESSIONAL DESIGNATION_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

"The Devil was having wife trouble"



"HERE I AM, twenty-four years old and what have I done?" he had once written. But he was 53, and seared and toughened by years of Arctic struggle before he reached his ultimate goal.

On December 15, 1909, Robert E. Peary, standing where no man had set foot before, planted the American flag on the North Pole.

His return to his base was so uneventful one of his Eskimos said the Devil must either have been asleep or having trouble with his wife.

Actually, good luck was a rarity to Peary. He had failed six times before to reach the Pole, but he never gave up. He lived all his life by his personal motto: *I shall find a way or make one.*

Peary's was a motto we all find easy to understand. It typifies the "strike-out-for-yourself" spirit of the 160 million Americans who stand behind the United States Series E Savings Bonds. Perhaps that's why these Bonds are among the finest investments in the world. For your personal security—and your country's—why not invest in them regularly?

It's actually easy to save money—when you buy United States Series E Savings Bonds through the automatic Payroll Savings Plan where you work! You just sign an application at your pay office; after that your saving is done for you. And the Bonds you receive will pay you interest at the rate of 3% per year, compounded semi-annually, for as long as 19 years and 8 months if you wish! Sign up today! Or, if you're self-employed, invest in Bonds regularly where you bank.

Safe as America — U.S. Savings Bonds

The U.S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

GENUINE Roccal BRAND SANITIZING AGENT

TO DO A BETTER SANITIZING JOB EVERY TIME

LABORATORY TESTED AND CONTROLLED

S112KB

This Control No. Guarantees

POTENCY • UNIFORMITY • QUALITY

The ORIGINAL Quaternary Ammonium Germicide

THE SANITIZING PROPERTIES of quaternary ammonium compounds are so well known to public health officials that little could be said about them that you do not know. Almost everybody in public health work has added the "quats" to the armamentarium he uses in his war on disease.

The question then, is which "quat"? Are they all alike? Which one can I depend on to do the job expected of it every time?

In Roccal, the original quaternary ammonium germicide, you are offered a product that is always uniform in quality because it is made under the most rigid controls. Every batch must pass the comprehensive laboratory tests of one of the world's leading pharmaceutical manufacturers. You can depend on Roccal to do a better sanitizing job every time!

When you specify a "quat"

BE SURE IT'S GENUINE ROCCAL

Sterwin Chemicals Inc.

Subsidiary of Sterling Drug Inc.

1450 Broadway, New York 18, N. Y.

Offices in Principal Cities Throughout The U.S.A.

C·R·P·A®

(C-reactive protein antiserum — Schieffelin)

Widely used test for detection of rheumatic fever[1]

"The technical procedures involved in carrying out the test are exceedingly simple . . . Except in cases of pure chorea, C-reactive protein is always present in the serum in acute rheumatic fever, and the amount present is more or less proportional to the severity of the illness."

C·R·P·A

Often points to presence of subclinical inflammatory reactions[2]

"The detection of CRP in the serum therefore serves as an indicator of the intensity of an inflammatory process . . . the most consistently positive laboratory test in the presence of rheumatic activity."

C·R·P·A

Close correlation between presence of C-reactive protein and rheumatic activity[3]

"Absence of this protein during the diagnostic examination would exclude active rheumatic fever even though other values, such as the erythrocyte sedimentation rate, were abnormal."

C·R·P·A

Level of C-reactive protein a measure of inflammation in acute myocardial infarction[4]

"a positive test for CRP is a non-specific but sensitive indicator of inflammation of infectious or non-infectious origin . . . useful in evaluating the subsidence of the inflammatory process in the heart."

C·R·P·A

An aid in deciding when inflammation has subsided[5]

"an aid in deciding when inflammation has subsided . . . useful in following the course of rheumatic fever in the same sense that the erythrocyte sedimentation test is. Like the latter test it is nonspecific and can be caused by any infection . . . but is more easily interpreted . . ."

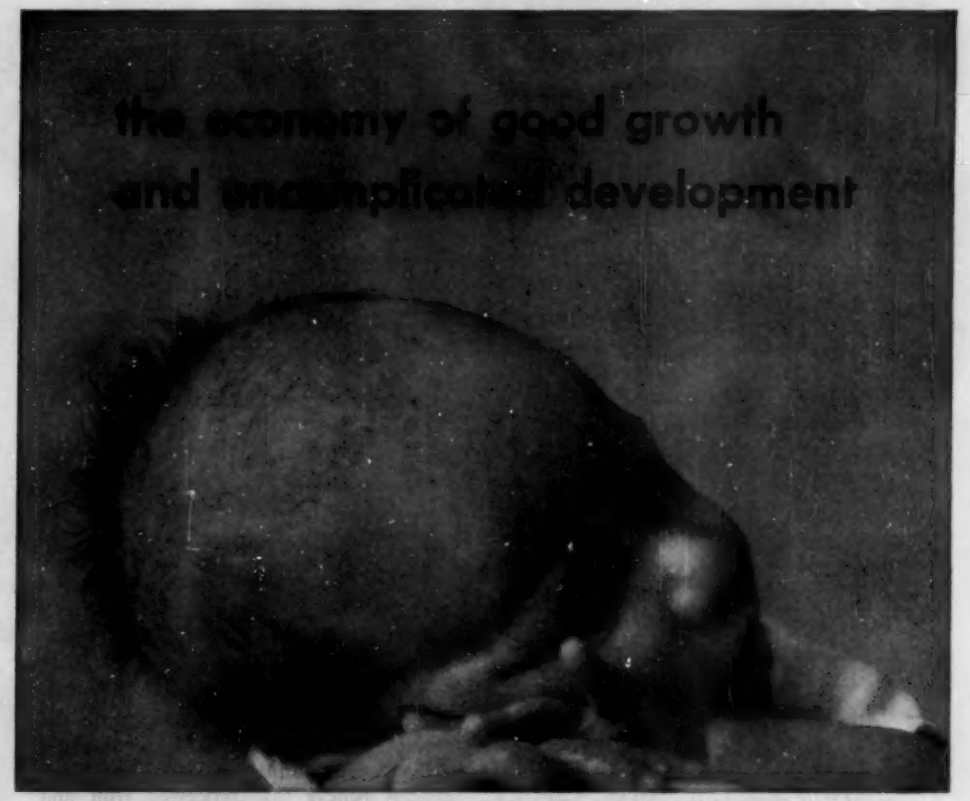
1. Wood, H. F., and McCarty, M.: Am. J. Med. *17*:768 (Dec.) 1954. 2. Stollerman, G. H., et al.: Am. J. Med. *15*:645 (Nov.) 1953. 3. Rants, L. A.: Disease-a-Month *1*:18 (Oct.) 1954. 4. Kroop, I. G., and Shackman, N. H.: Proc. Soc. Exper. Biol. & Med. *86*:95 (May) 1954. 5. McEwen, C.: M. Clin. North America (Mar.) 1955, to be published.

Supplied: 1 cc vials (30-40 determinations); also Capillary tubes . . . vials of 100; Capillary tube racks.

For complete descriptive brochure on materials and techniques required just send request to:

Schieffelin & Co. New York 3, N. Y.

Pharmaceutical and Research Laboratories since 1794



SIMILAC POWDER—*physiologic food during the first year of life*—

To assure sound growth and reduce many of the complications commonly encountered in the first year of life, the full, balanced Similac formula provides: fat, protein and carbohydrate closely approximating the content of human breast milk in quality and quantity; a full complement of known essential vitamins in adequate amounts; an adjusted mineral content; a soft, fluid curd with zero tension, assuring rapid and easy digestion.

SIMILAC POWDER—*stable in price . . . an economy in feeding*—

With food costs at or near an all-time high, the price of Similac has remained relatively constant since 1923. Similac with its complete modification and added vitamins is virtually the same in price as vitamin-supplemented whole-milk feeding — and in many instances actually affords greater economy.

SIMILAC *powder*

There is no closer equivalent to the milk of healthy, well-nourished mothers

SUPPLIED: Tins of 1 lb., with measuring cup. Similac is also available as concentrated Liquid in tins of 13 fl. oz.

M & R LABORATORIES, *Columbus 16, Ohio*

WHY SHOULD THE VITAMIN C CONTENT OF FRUIT AND VEGETABLE JUICES BE STANDARDIZED?

Because nutrition reports disclose that—

- **Vitamin C deficiencies exist throughout the country***

Proof of deficiencies among adults and children. You should know these facts!* Diet surveys from Maine and Vermont, New York, Illinois, New Mexico, Oregon, West Virginia, and Texas show a definite pattern of inadequate vitamin C intake. These studies covered grade school and high school children, college men and women.

Spongy, swollen gums symptomatic of scurvy.

From these studies* of dietary habits and physical conditions there is considerable proof that many of the children and adults covered by the surveys have actual, physical symptoms of vitamin C deficiency.

Infantile scurvy. Scurvy* occurs, even today, among infants who are artificially fed. Fortunately the disease may be cured by the administration of vitamin C. How much more sensible it is to prevent it by supplying these bottle-fed infants with the daily allowance of 30 milligrams of vitamin C as recommended by the Food and Nutrition Board of the National Research Council for children under one year of age.

Symptoms of infantile scurvy are fretfulness and fear of being touched.

These bottle-fed infants, unless receiving a pediatric prescription containing vitamin C, are largely dependent on supplemental ascorbic acid which they receive from fruit or vegetable juices. Unless fortified with vitamin C many of the processed juices may not supply these babies with adequate quantities of this essential element.

Typical position of legs in infantile scurvy.

- **Scurvy has not disappeared from the United States***

What can be done? Because of the increasing evidence that American diets are deficient in vitamin C, leading nutrition experts believe that processed fruit and vegetable juices, on which the public is so reliant for its supply of this necessary vitamin, should contain the "Vital Ingredient."

The Vital Ingredient of any processed fruit or vegetable juice is a *dependable* and *adequate* supply of vitamin C. You can give your juice this ingredient by *standardizing its vitamin C content.* The processing is simple and the new low cost of ascorbic acid makes juice standardization more attractive than ever.

With ascorbic acid available *by the tons* at extremely modest cost fruit and vegetable juices can have a standardized vitamin C content for the better protection of the nation's health and well-being.

*Statements are based on documented reports. References on request.

Illustrations after photographs in The Vitamins in Medicine by Bicknell and Prescott, Third Edition, published by Grune & Stratton, Inc., New York.

ROCHE Pure, crystalline VITAMIN C (Ascorbic acid, U. S. P.)

VITAMIN DIVISION • **HOFFMANN-LA ROCHE INC.** • NUTLEY 10, N.J.

In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West, Montreal, Quebec

Vacuum Pressure Pump
Cat. XX 60 000 00

Hydrosol Standard
Filter Holder with Sterilization
Base and Cover
Cat. XX 20 047 00

Millipore
Filters
(Box of 100)

Plastic (Disposable)
Petri Dishes
(Box of 10)

MILLIPORE MF FILTERS

In the analysis of • Bacterial Contaminants • Total Counts • Coliforms • Soil Organisms

ACCURACY — The MF® has been described as the equivalent of six (6) 5-tube MPN's.*

SENSITIVITY — The isolation and identification of specific pathogens by the MF is often possible when other methods fail.†

RELIABILITY — Reproducible results occur time after time. Standard deviation less than half that of MPN. $\sigma_{MF} < \frac{\sigma_{MPN}}{2}$

LESS COSTLY — The reduction in cost per test permits wider and more frequent monitoring of water supplies for corrective action.

MORE RAPID — Total counts in as little as four (4) hours; confirmed tests in sixteen hours versus three to four days with other methods.

SIMPLE TO USE — Routine analyses require no extensive training in operation or in interpretation of results.

A comprehensive summary of literature in many new techniques and a complete line of accessory equipment are available from the laboratories of the

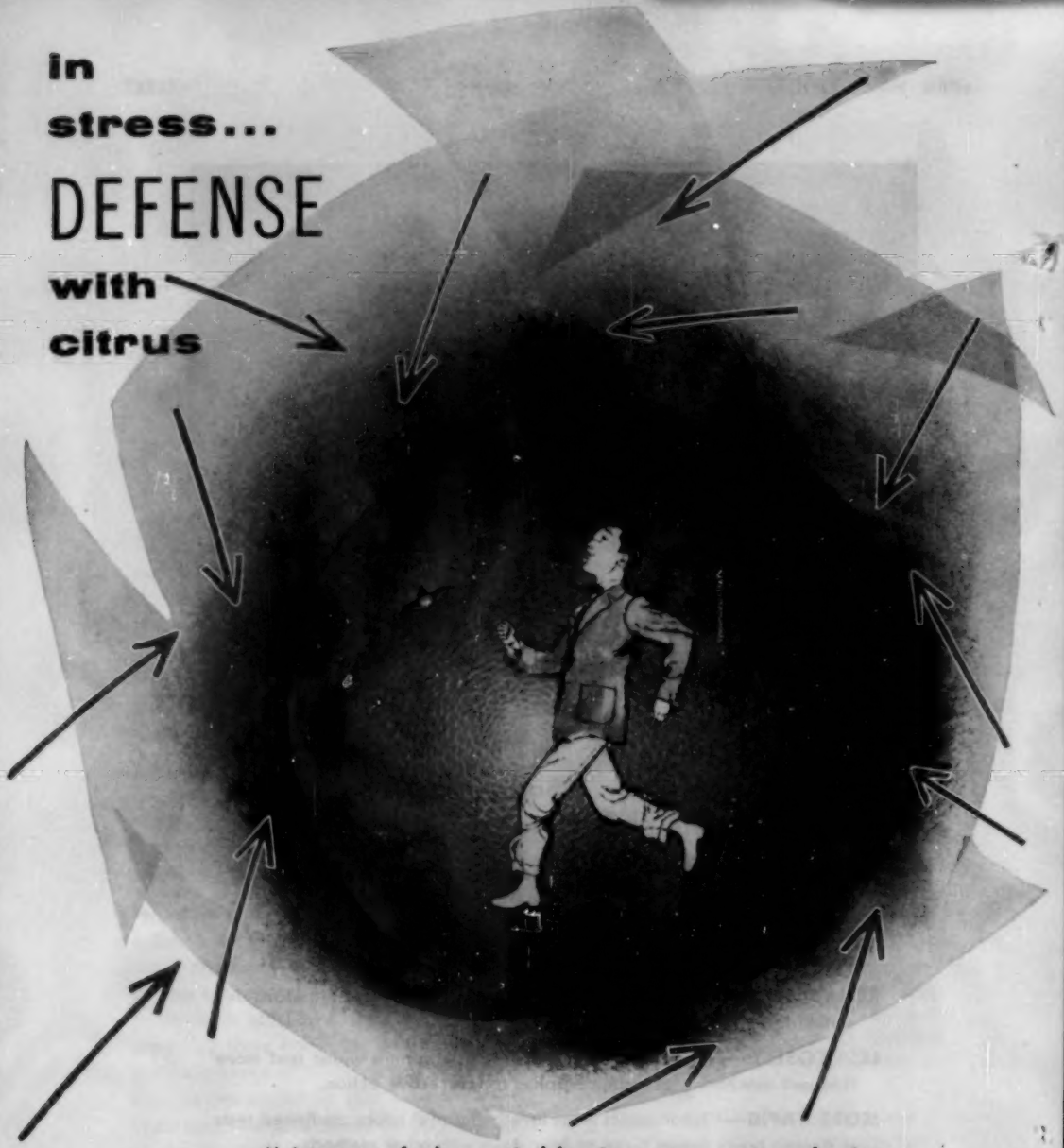
MILLIPORE FILTER CORPORATION
Watertown 72, Mass., U. S. A.

*Woodward, 1952, EHC Activity Report 11.13 Jan.-Mar.
†Collet, Johnston, Ey, Croft, 1953 J. Amer. Public Health Assn. 43:1438-40 November.

in stress...

DEFENSE

with citrus



Maintenance of adrenocortical function as a cornerstone of resistance in stressful life situations helps prevent disorders characteristic of the general adaptation syndrome. Since vitamin C is essential to production of anti-stress hormones by the adrenal cortex, an ample intake of readily utilized *natural vitamin* C as provided by citrus fruits and juices is desirable.

FLORIDA CITRUS COMMISSION • *Lakeland, Florida*

FLORIDA *Citrus*

ORANGES • GRAPEFRUIT • TANGERINES

P-38 Dacro Milk Caps

Housewives

like the protection and convenience of P-38 Dacro, and particularly the fact that it's an excellent re-seal.

Dairy Operators

like its unmatched plant economy and the way it makes their bottling operation more profitable.

- Forms an air-tight seal
- Completely covers the pouring lip
- A perfect re-seal time after time

CROWN

Crown Cork & Seal Company, Inc. *Dacro Sales, Baltimore 3, Maryland*

A new way to kill him

takes 3 years and $1,000,000

You need lots of weapons to fight the 82,000 kinds of insects that cost farmers one billion dollars annually.

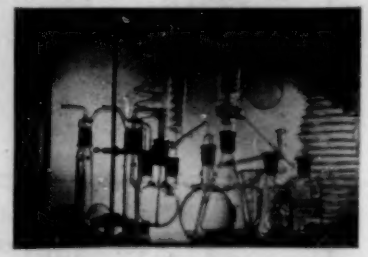
The search for the perfect insecticide goes on continually. And a tricky search it is. A new compound, probably a hydrocarbon, might kill insects but it might also harm crops. Or be toxic to humans.

Finding out generally takes 90% of the estimated million dollars spent in developing a new insect killer. The money goes for initial research, laboratory and field testing, toxicity tests, checking residue and effects on flavor, growth and appearance. If a new control passes these checks, laboratories work out proper formulations.

You can see how vital the laboratory is to modern agriculture. The many firms in this work are turning up new insecticides, herbicides and fungicides at a steady rate.

PYREX laboratory ware is especially helpful in work of this kind. It gives you maximum control over critical sensitivity because its extraordinary chemical stability keeps delicate chemicals safe from contamination. Chemical stability *plus* mechanical and thermal strength match the utility of PYREX ware to a wide range of tasks; make it the most economical laboratory ware you can buy.

You can get exactly the PYREX apparatus you need from your laboratory supply dealer. For accuracy, dependability, economy—standardize on PYREX ware.



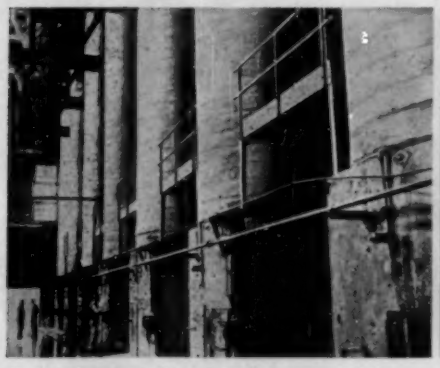
Corning Glass Works
Corning, New York
Corning means research in Glass

PYREX® laboratory ware
. . . the tested tool of modern research

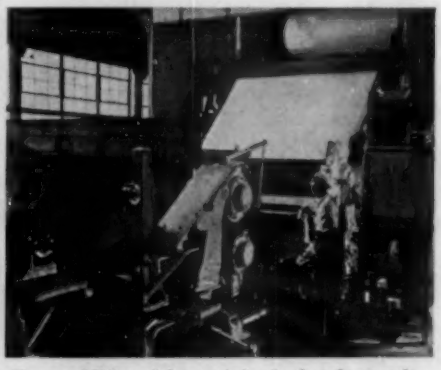
On Guard . . . *to bring milk to the public at its best!*

#1 OF A SERIES

Milk travels the long road from grazing field to the American home, protected every inch of the way by the highest standards of sanitation in the world. For the final part of its journey much of America's milk travels in Canco milk containers. Here is the first of a series which outlines in brief the story of Canco containers and the role they play in bringing milk to the public at its best



In these giant digesters the paper milk container is born. Here wood chips are cooked in a caustic solution, at temperatures over 300°F. This cooking or digesting process results in a bacteria-free cellulose fibre—the paper pulp.



Two additional bacteriological safeguards: After bleaching baths, the pulp undergoes a drying process. Heated steel rolls, above, raise its temperature as high as 240°F. . . . transform it into paper from which the carton is stamped.

■ Every step in the manufacture and use of Canco fibre milk containers—starting with the fabrication of the paper itself—is subjected to rigid bacteriological controls. For the American Can Company seeks to do more than merely meet allowable tolerances. Thus, better than 96% of Canco containers are shown to be sterile by frequent rinse tests conducted in our factory. The remaining containers yield only two to four bacteria each—less than four-tenths of one percentum of the tolerance!

Fibre Milk Container Department

AMERICAN CAN COMPANY

100 Park Avenue, New York 17, N. Y.

uncommonly good for...
the most common nutritional defect

Whether garnishing a salad or fortifying a casserole dish, cottage cheese offers a most gratifying and wholesome solution for many problems that stem from "undernutrition." Not only has protein deficiency been singled out as "the most common nutritional defect in the aged,"[1] but inadequate dietary regimens are found with surprising frequency among children referred to physicians because of growth failure.[2]

Indeed, the stigmata of chronic undernutrition may be evident even before birth, when fetal bone and tooth impairment give telltale signs of poor mineral and vitamin intake by the mother. And the same dietary inadequacies may simultaneously take their maternal toll by precipitating such complications as eclampsia, vomiting, osteomalacia and premature labor.[3,4,5] The recommended diet of pregnancy and lactation, therefore, stresses *high calcium, high protein* and *low fat*[6]... requirements specifically fulfilled by cottage cheese.

The high protein diet, moreover, plays an important role in improving liver function,[7,8] and in significantly decreasing convalescence time following viral hepatitis.[9] In addition, neurologic and psychologic complications resulting from "undernutrition" are problems that confront pediatrician and geriatrician alike.[10,11,12]

And for all such patients, Borden's Cottage Cheese proffers so many advantages ...easy digestibility because of low fat content...soft fine curds resulting from careful selection of bacterial "starters"...and as with all Borden dairy products, choice of only finest of fresh pasteurized milk, hygienically skimmed and incubated, to serve as the basis of a cottage cheese with pleasing flavor to complement high nutritional value.

1. Sebrell, W. H., Jr., and Hundley, J. M., in Stieglitz, E. J.: Geriatric Medicine, ed. 3, Philadelphia, J. B. Lippincott Company, 1954, p. 181. 2. Stevenson, S. S.: Pediat. Clin. North America. 1:433 (May) 1954. 3. Tompkins, W. T., and Wiehl, D. G.: Pediat. Clin. North America 1:687 (Aug.) 1954. 4. Macy, I. G., and Mack, H. C.: Am. J. Obst. & Gynec. 68:131 (July) 1954. 5. Burke, B. S.: Am. J. Clin. Nutrition 2:425 (Nov.-Dec.) 1954. 6. Murphy, G.H., and Wertz, A. W.: J. Am. Dietet. A. 30:34 (Jan.) 1954. 7. Boyden, A. M.: Surg. Clin. North America 34:1375 (Oct.) 1954. 8. Barborka, C. J.: Treatment by Diet, ed. 5, Philadelphia, J. B. Lippincott Company, 1948, p. 494. 9. Davidson, C. S.: A.M.A. Arch. Int. Med. 94:460 (Sept.) 1954. 10. Ant, M.: Am. J. Digest. Dis. 21:261 (Sept.) 1954. 11. Bakwin, H.: J. Pediat. 45:110 (July) 1954. 12. Cohn, H., et al.: Am. J. Digest. Dis. 21:281 (Oct.) 1954.

Manufacturers and distributors of BORDEN'S Instant Coffee • STARLAC non-fat dry milk • BORDEN'S Evaporated Milk • Fresh Milk • Ice Cream • Cheese • EAGLE BRAND Sweetened Condensed Milk • BREMIL powdered infant food • MULL-SOY hypoallergenic food • BIOLAC infant food • DRYCO infant food • KLIM powdered whole milk

The *Borden* Company
350 Madison Avenue, New York 17, N. Y.

Meat...

and the Therapeutic Protein Dietary

For many years clinicians and surgeons have recognized the therapeutic value of the high protein dietary.

In more than normal amounts, protein is essential in the treatment of many diseases characterized by hypoproteinemia[1]—nephrosis,[2] sprue, pellagra, chronic colitis, certain liver afflictions,[3] anorexia of diverse etiologies. High protein intake helps to stabilize tissue protein in diseases in which protein catabolism is increased, such as hyperthyroidism and protracted high fever. Dietaries high in protein promote wound healing in the surgical patient and speed convalescence.[4] Sufficient protein ingestion constitutes a protective measure in the geriatric patient.[5] Large amounts of protein are required to satisfy the growth and other metabolic needs of the pediatric patient.

Meat provides large quantities of protein highly effective in the body economy—tissue growth and maintenance, formation of antibodies, enzymes, and protein hormones, and regulation of fluid balance. It also supplies valuable amounts of B vitamins and essential minerals including iron, phosphorus, and potassium. Appeal to the palate, easy digestibility, and its nutrient contribution make meat an important component of therapeutic diets.

---

1. Taggart, H. A.: Protein Metabolism in Relation to Nutritional Aspects of Medical Diseases, Pennsylvania M.J. *54*:339 (1951).
2. Marquardt, G. H.; Cummins, G. M., and Fisher, C. I.: Blood Protein Replenishment in Treatment of Nephritic Edema, Quart. Bull. Northwestern Univ. M. School *26*:140 (1952).
3. Kark, R. M.: Low Sodium and High Protein Diets in Laennec's Cirrhosis, M. Clin. North America *35*:73 (1951).
4. Kekwick, A.: Protein Deficiency in Surgical Patients, Ann. Roy. Coll. Surgeons England *7*:390 (1950).
5. Stieglitz, E. J.: Nutrition Problems of Geriatric Medicine, Report of Council on Foods and Nutrition, J.A.M.A. *142*:1070 (Apr. 8) 1950.

The Seal of Acceptance denotes that the nutritional statements made in this advertisement are acceptable to the Council on Foods and Nutrition of the American Medical Association.

American Meat Institute

Main Office, Chicago...Members Throughout the United States

DIFCO

Reagents

FOR SEROLOGIC DETECTION

of Syphilis

THIS group of Bacto Reagents is prepared expressly for use in the serologic diagnosis of syphilis by means of the more generally employed complement-fixation, precipitation and flocculation tests. All Bacto antigens are tested for sensitivity and specificity in laboratories designated for that purpose by the author serologists of the tests for which they are specified. No antigen is released for distribution until it has been approved.

Bacto-B J L Flocculation Antigen	for the Boerner, Jones and Lukens flocculation test.
Bacto-B J L Wassermann Antigen	for the modification of the Wassermann test devised by Boerner.
Bacto-Eagle Flocculation Antigen	for the Eagle flocculation test.
Bacto-Eagle Wassermann Antigen	for the Eagle modification of the Wassermann test.
Bacto-Hinton Cardiolipin Indicator	a cardiolipin antigen for the Hinton test.
Bacto-Hinton Indicator	for the Hinton glycerol cholesterol reaction.
Bacto-Kahn Cardiolipin Antigen	for the Standard Kahn Test using a cardiolipin antigen.
Bacto-Kahn Sensitized Antigen	for the presumptive procedures of the Kahn system.
Bacto-Kahn Standard Antigen	for routine procedure of the Kahn test.
Bacto-Kolmer Cardiolipin Antigen	a cardiolipin antigen for the Kolmer technique.
Bacto-Kolmer Improved Antigen	an antigen for the Kolmer technique.
Bacto-Kolmer Improved Antigen (Reenforced)	an antigen for the Kolmer technique.
Bacto-VDRL Antigen	a cardiolipin antigen for slide and tube tests.
Bacto-Antisheep Hemolysin	a stable antisheep rabbit serum of high titer.
Bacto-Complement	a desiccated guinea pig serum.
Bacto-Cholesterol	ash-free sensitizing reagent for antigens.
Bacto-Corn Germ Sterol	for use in reenforcing the antigen used in the Eagle flocculation test.

Specify "DIFCO"

THE TRADE NAME OF THE PIONEERS
In the Research and Development of Dehydrated Culture Media and Microbiological Reagents

DIFCO LABORATORIES
DETROIT 1, MICHIGAN